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Fax Facts • PR Tips • Choosing a Database • Software & Hardware Reviews

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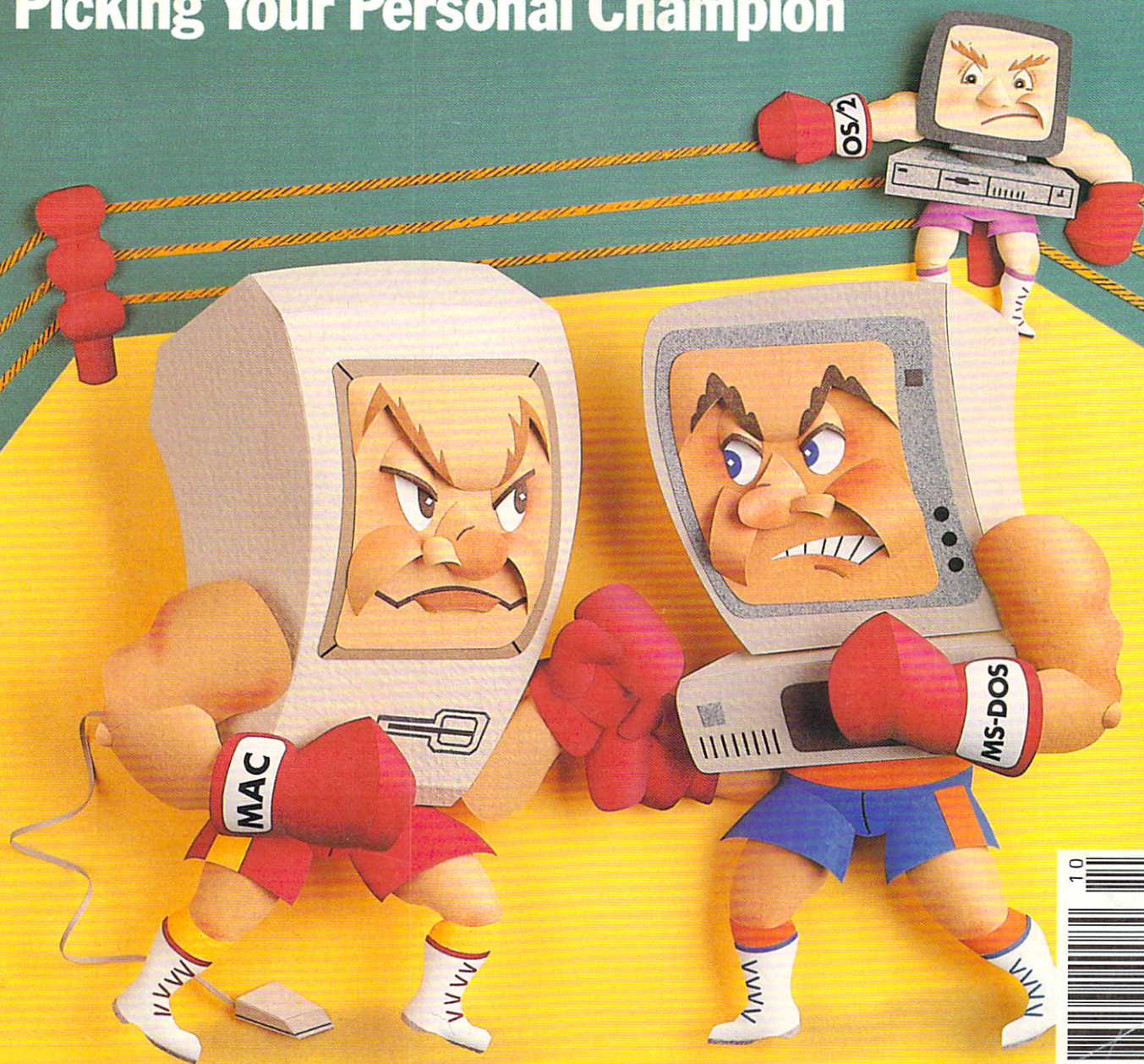
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MS-DOS vs MAC vs OS/2

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There's one mini-van that stands apart from the crowd with its distinctive aerodynamic look—the Ford Aerostar. It offers optional touches of luxury and convenience, from headphone jacks and heating/cooling fan controls for rear-seat passengers, to an overhead console trip computer.

Deluxe Comfort. Step easily into Aerostar—and

carry up to seven. Or pop out the rear seats—and take on 139 cu. ft. of cargo. Loads of living room!

Eddie Bauer Style. Choose from sporty XL or XLT Aerostar—or the stylish Eddie Bauer (shown below). It comes with dual Captain's Chairs and seat-bed in back*. Or optional Quad Captain's Chairs. Also, two-tone paint. (Fold-away mirrors shown not available on early '89 models. See dealer for details.)

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*Seat bed standard on Eddie Bauer model and optional on XL.

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You get seven popular applications: text processing, an electronic filer, worksheet, telecommunications, a calendar, plus Music and a Paint program. Personal DeskMate 2 is incredibly easy to use, with pull-down menus and dialogue boxes for selecting functions. You can also add a mouse for even easier operation.

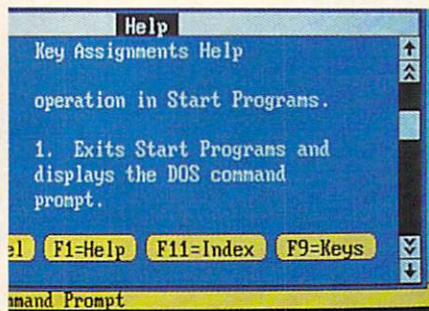
And of course the 1000 HX runs today's most popular IBM compatible software. There are thousands of programs to choose from—for your child's education, home budget and management, financial planning, exciting games, sophisticated word processing, and much more.

Come to your nearby Radio Shack today—the Tandy 1000 HX is your best value in entry-level PC computing.
(25-1053)

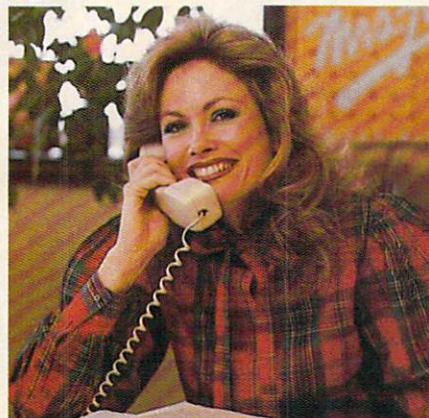


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FEATURES

COVER STORY

Macintosh vs. MS-DOS vs. OS/2:

Page 51

Which operating system is best for you? Apple's Macintosh or one of the hundreds of MS-DOS compatibles? Do you invest in one of IBM's PS/2 computers or another machine that's ready to run the new OS/2 operating system? Here's an overview of the state of each of the three systems, plus answers to 20 questions that every computer shopper should ask.

BUSINESS PROFILE

Public Relations Specialist Risks Business—and Wins

Page 58

How the owner of a fledgling PR firm left the New York City area—the PR capital of the world—and used technology to build his business and reputation and multiply his profits.

TIPSHEET

How to Do Your Own Public Relations

Page 61

Experts give advice on getting publicity, designing a public relations campaign, and writing press releases. *Plus:* How Debbi Fields (of cookie fame) used public relations as the "secret ingredient" in making her business a success.

SOFTWARE

Databases: Relational or Flat-File?

Page 64

Knowing that a database can help you organize interrelated bits of information is just a start. The big decision is determining which type is best for you: a less structured flat-file or a highly structured relational database.

BUYER'S GUIDE

Laser Printers

Page 67

Use crisp laser output to make every document look impressive. To help you determine the printer that best suits your needs, here's a question-and-answer guide, short reviews of leading laser printers, and a shopping chart of 30 leading models.

PRODUCTS

Equipping Your Office

Page 44

Tips on making smart use of your money to choose the facsimile machine that's right for you—from among the bare-bones, midrange, and full-featured machines on the market.

Hardware Reviews

Page 74

Computers: The AST Premium Workstation 286/Model 243. *Peripherals:* The IBM Proprietary II printer and NEC's MultiSync II monitor. *Office Equipment:* The Canon FaxPhone 20, Northwestern Bell's EasyTouch telephone, and the Telephone Clock Radio with Answering System from Panasonic. *Add-Ons:* Paradise Systems's VGA Plus video card and the Intel Inboard 386/PC.

Office Essentials

Page 82

The latest in useful and innovative office accessories, supplies, and furniture. *This month:* Gered's Mousetrap to house your mouse; Avery labels that beat laser-printer heat; Hon's Spectra Seating chair; and a disk caddy from Seima International.

Software Reviews

Page 84

Full reviews: *InTalk*; *Opus I*; *ProComm Plus*; *Q & A*; and *SideKick Plus*. Quick Takes: *Comment*; *Graph-in-the-Box*; *MacPaint*; *PC-Calc +*; *Quicken*; *II Write*; and three *Works of Art* clip-art samplers.

Software Library

Page 93

The best of the best: A hall of fame comprising 50 business and productivity programs reviewed since January 1987 that earned four-star ratings from our reviewers.

FAMILY COMPUTING

Living and Learning with Computers

Page 96

Three profiles of people whose lives have changed because of computers, plus stories, events, and contests to celebrate Computer Learning Month.

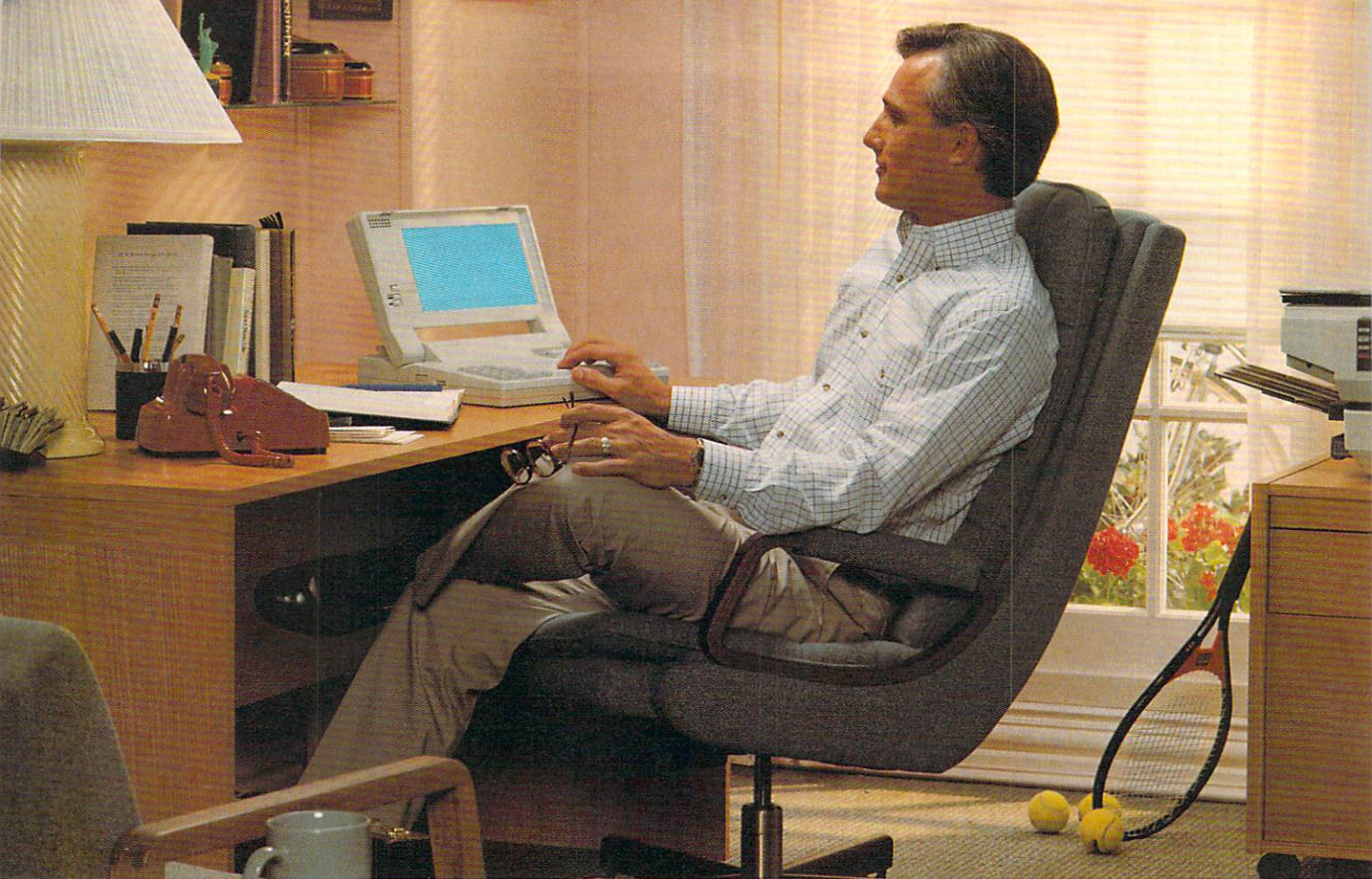
Software for Learning and Leisure

Page 99

Education and Personal Productivity Reviews and Entertainment Reviews.

Entertainment News and Hints

Page 106



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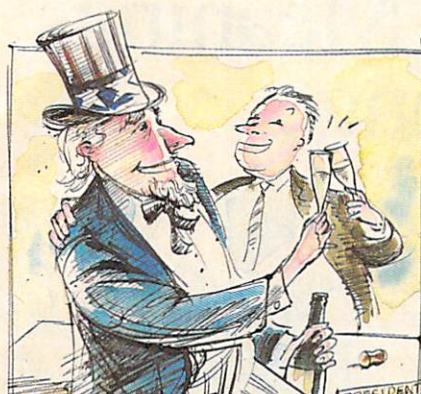
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CIRCLE READER SERVICE 13



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COLUMNS

ShopTalk

Page 26

Small-business and home-office expert Joanne Pratt advises a couple planning a desktop-publishing business, a teacher seeking grade-management software, and a nursing administrator scheduling staff hours.

Workstyles

Page 18

Senior Editor Nick Sullivan describes how he "evolved with the electronic species" and forged a viable home-and-office link via electronic mail, a multiline telephone, answering machine, fax machine, and other technology.

Machine Specifics

Page 20

Computer and software news, opinions, quotes, and rumors, reported by HOME-OFFICE COMPUTING columnists with an eye on the Apple II, Tandy, IBM PS/2, Macintosh, and MS-DOS universes.

Clinic

Page 40

HOME-OFFICE COMPUTING's technical staff digs up answers to readers' computing questions. *This month*: Add-on cards, compatibility, books for learning BASIC, overly sensitive keyboards, and home security.

Working Smarter

Page 46

Columnists Paul & Sarah Edwards give insight and inspiration on the art of selling—and the art of setting daily goals that will stretch your time.

DEPARTMENTS

Editor's Note

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Letters

Page 8

Up Front

Page 12

News, advice, tips, and a shot of humor—on computing, using home-office technology, and running a home business. *This month*: Uncle Sam pays people to go independent; the rising use of cellular phones and copiers; *USA Today* puts news onto fax machines; why corporate workers quit; a *Far Side* cartoon; and how small businesses boost job growth. *Plus*: Eight time-saving, money-making pointers from home-business expert Lis Fleming.

Spreadsheets

Page 28

Need specific reports from your spreadsheet, such as the description, price, and shipping cost of a product? Let your spreadsheet's "lookup" function hunt down information for you.

Telecomputing

Page 32

Apply your life experience and skills to a profitable electronic bulletin board that sells advertising space.

Word Processing

Page 34

Can grammar and style checkers really improve your writing? Here's a summary of their advantages and limitations. *Plus*: A roundup of leading style-checking programs.

Desktop Publishing

Page 36

Choosing a PostScript-equipped laser printer could mean another \$2,000 out-of-pocket—and greater versatility in printouts. Here's what you need to know before you make the investment.

Finance

Page 38

A review of *Dollars and Sense*, a personal-finance package that easily shoulders accounts payable and receivable, payroll, budgeting, and other small-business tasks.

Best-Selling Software

Page 95

Classifieds

Page 111

Advertiser Index

Page 113

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- ☐ FINANCES 3a,b—(2 disks) Prepare financial spreadsheets.
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- ☐ GAMES 5—Hack, you and your trusty dog in a wild adventure.
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EDITOR'S NOTE

The Many Meanings of Change

Shortly after I moved to New York and began to work in publishing, I discovered I missed many of the things I had left behind. One of them was teaching. So, in the evening, I began to teach English on a volunteer basis to recent emigrés. My students, displaced professionals who would probably never again practice their particular professions, faced many adjustments, including learning the language, customs, and currency of their new country, making friends and finding a way to make a living. We helped one another adapt to the changes in our lives.

Our favorite way of studying English was to pore over the daily paper in search of idioms. We would start by focusing on a word and try to exhaust all its meanings. "Take" was one of our favorites. "Change" was another. We might have talked about changing an appointment, trains, clothes, a twenty-dollar bill, or the subject. Someone might have mentioned walking down the street and being asked for spare change. In a political discussion, we might have touched on the idea of power changing hands or of changing horses midstream. We never changed our minds about enjoying this mental exercise.

Although it's fun to muse about the word "change," most of the time it's not fun to initiate change itself. It is, however, often necessary.

The pages of HOME-OFFICE COMPUTING contain profiles of people who have changed their lives by creating a new lifestyle for themselves that combines work and home, aided by the power of technology. Our authors and editors write about the changes in the reasons people embrace technology, in the technology itself, and in the ways it is being put to use.

I have talked, especially in recent months, about some of the changes in our magazine, aside from its name. In this, the first issue of HOME-OFFICE COMPUTING in our standard format, you will see changes in both content and design. There are many new departments to help you better use and choose the technology you opt for; specific applications are covered in individual monthly departments on word processing, databases, spreadsheets, desktop publishing, telecommunications, and finance. Of course, we'll continue to feature education and entertainment, now in our special *Family Computing* section (see page 96), and our popular hardware and software reviews, now in greater numbers than ever.



Design Director Vincent Ceci (left) and Design Associate Drew Hires creating our new look.

More help with your specific problems or questions will be available each issue in *Clinic* (see page 40) and *Shoptalk* (see page 26). And universal issues faced when running a home-based business are addressed in *Working Smarter* (see page 46).

Our new design, executed by Design Director Vincent Ceci and Design Associate Drew Hires (see photo above), appeared to be the work of quick-change artists, as they made an amazingly seamless transition to the format you see in this issue. They have and deserve the admiration and thanks of our entire staff.

Keeping in step with all this change is our parent company, Scholastic Inc., and its far-seeing president, our publisher, Dick Robinson. Early on, Dick knew that computers would change the home and family life in this country and that an educational process would be a necessary part of the transition. He understood both the role Scholastic could play in helping people manage that change and how, by doing so, the company would expand its mission. With a publisher experienced in and dedicated to helping people learn, we remain committed to guiding readers as they use technology to become more productive in their work, more effective as they gain new skills and knowledge, and happier in their leisure-time pursuits.

Claudia Cohe

CLAUDIA COHL
EDITOR-IN-CHIEF

PHOTOGRAPH BY CLAUDIA COHL

Tandy Computers:
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The Tandy[®] 1000 TX

The most affordable
80286-powered
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The Tandy 1000 TX features a high-speed 80286 microprocessor for far greater processing power than ordinary PCs. This brings true 16-bit technology, previously found only in "AT" class machines, to an affordable PC. You'll breeze through IBM[®] compatible software faster than ever.

This system is ready to run from day one because the 640K TX comes with a 720K 3 1/2" disk drive, all the necessary adapters, as well as MS-DOS[®] 3.2 and GW-BASIC. We even include our exclusive Personal DeskMate[™] 2 software.

You get seven popular applications: text processing, an electronic filer, worksheet, telecommunications, a calendar, plus a 16-color Paint program and a Music program to enter and play back songs. Personal DeskMate 2 is incredibly easy to use, with pull-down menus and dialogue boxes in plain English—not cryptic codes.

Add a mouse to the built-in RS-232 adapter to make selecting functions even easier.

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CIRCLE READER SERVICE 42

SPARKED

Your constant reference to the "work-at-home" potential has definitely sparked me into exploring the ways and means of pursuing a computer-based home business. Perhaps desktop publishing, word processing, or slide production, all of which I have used in my sales and marketing career.

I'm especially encouraged to see your occasional references to Canada in articles about entrepreneurs. Please encourage this trend, and free trade might just happen!

FRED E. DEVELLANO
Orangeville, Ontario, Canada

I really appreciate the hard work you have done to help us readers get started in home-based businesses. It was you who helped me realize it was possible to start the ball rolling myself.

LYNDELL R. MARTIN
Harrisburg, Illinois

HOW ABOUT C 64?

I am the owner of a small business, which is C 64 based. I would not be one if it were not for the support that I receive from my local computer club and from the specific C 64 coverage that I used to find in your magazine. You seem to be ignoring my computer now.

In addition, if you wish to be a truly "home-office" magazine, I suggest that you cover all the products that meet the needs of such offices. How about covering computer supplies such as paper, ribbons, and disks? What about furniture, lighting, and other office accessories?

LOIS L. GRIFFITH
Levittown, Pennsylvania

EDITOR'S NOTE: *We trust that HOME-OFFICE COMPUTING will continue to furnish information that will help you in your business; much of our coverage is useful not just to Apple II, MS-DOS or Macintosh owners, but to all computer users.*

Each month, you'll find coverage of office supplies and accessories and computer peripherals in existing departments such as Hardware Reviews, or in the new sections, Office Essentials and Equipping Your Office. Watch for a buyer's guide to facsimile machines in the November issue and a telephone-shopping tipsheet in the December issue.

FOND FAREWELL

I've been a subscriber since the early days of FAMILY COMPUTING. You've helped me find the computer equipment that is best for me, guided me in learning to use it efficiently, and pointed me toward some terrific software (some of which, despite "progress," I

refuse to give up). For my part, I've recommended you to everyone.

Alas, it seems all good things must come to an end. I've seen it coming for some months now, and your August issue confirmed my suspicions. You're going on to HOME-OFFICE COMPUTING, and I'm remaining, at least for the present, FAMILY & HOME-OFFICE COMPUTING.

LAURA MCGEE
Hammond, Illinois

Times change, people change, and alas, so has your magazine. Dr. Cursor and the "Special Ks" are gone, and the focus of your magazine has changed along with its name. Those articles of interest to families apparently will soon be relegated to a relatively minor role.

I wish you well on your new venture. You gave me a great deal of pleasure during the past four years, and my family and I appreciated your efforts.

GREGORY L. HAYES, D.MIN.
Wellsburg, West Virginia

EDITOR'S NOTE: *Fear not; the family is not forgotten. As we announced in August and September, we'll continue to dedicate a large portion (usually 8-12 pages) to a special Family Computing section. You'll find features on education and creativity, entertainment news, hints, and news of conversions of games to new machines, plus a regular complement of long and short reviews of leisure and learning software.*

PROFITING FROM SPREADSHEETS

Rob Krumm's article, "Making Financial Decisions with a Spreadsheet" (June 1988) loosely uses the terms "gross profit" and "net profit" when it should be referring to funds available for reinvesting. Profit would refer to how much is left from the sale price after deducting the original purchase price, the cost of additions, improvements, and fix-ups for sale, and the real-estate commission.

Also, the point is not that the new home in Krumm's example costs less than the old home and that you may owe income taxes on the balance. The point is to determine whether the new home costs more or less than the equity, or what has been earned from the former home.

PAUL TRAINOR
Madison, Tennessee

YOU'RE A NEW CLASSIC!

September's "Anniversary Issue" is a classic! Please keep more of the same in every issue. At-home computer operations are more fun and rewarding every day. With a souped-up Apple IIe, I administer my area's largest catering business and have a thriving computer consulting and template-development operation.

Keep in mind that there are millions of Apple II users—many running full- or part-time businesses—who need up-to-date expert information as much as do IBM PC and compatible users.

Our consulting business now requires that we buy an AT-compatible; however, my Apple II, with *AppleWorks*, *VIP Professional*, and several other programs, will carry much of the load.

ROBERT J. NETRO
Canton, Ohio

CORRECTIONS

Brilliant Image is a full-service graphics company in New York City with a toll-free number (1-800-727-FAST). Your May cover story, "Presentation Graphics," featured two of our company's slides on the front cover and first page of the article (page 39). A third slide appeared on page 40. Our company name was deleted from the images, and no credit was given.

In addition, the name of a competitor was mentioned in the caption next to the images on the first page. Had the list of service bureaus on page 44 been properly alphabetized, Brilliant Image would have appeared first. We not only provided your author with sample graphics, but also information for the article.

JERRY CAHN, PHD
PRESIDENT, BRILLIANT IMAGE
New York, New York

EDITOR'S NOTE: *Brilliant Image should have been properly credited as a source. We apologize for the omission and appreciate your help in supplying images and information for the article.*

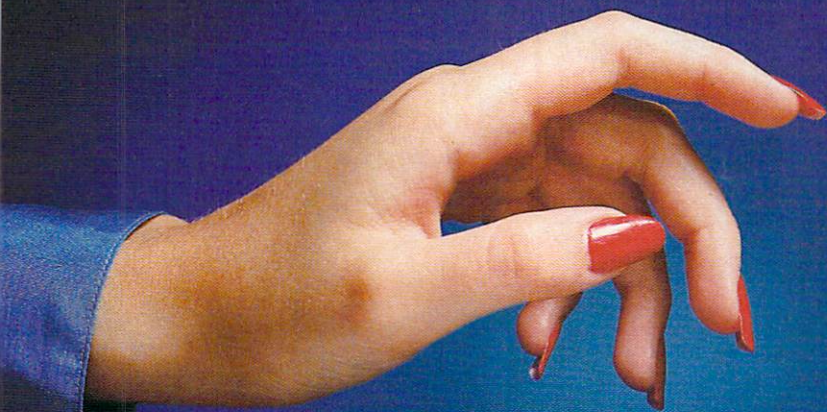
The *Can File*, covered in "Keeping Track of Thousands of Details" (July 1988, page 34) does not require reindexing after deleting a record, as the article stated.

Our program is a sales-call tracker that sorts and/or controls breaks on any field, and is network-ready. Files are *dBase III*-compatible, and source code is available for use by serious database programmers. Version 2.0 will include features you see as lacking.

JOHN GRANT
PRESIDENT, FENWARE DEVELOPMENT
Shorewood, Wisconsin

The correct number for the National Home-Business Report (*Home-Business Resources*, September 1988) is (312) 717-0488.

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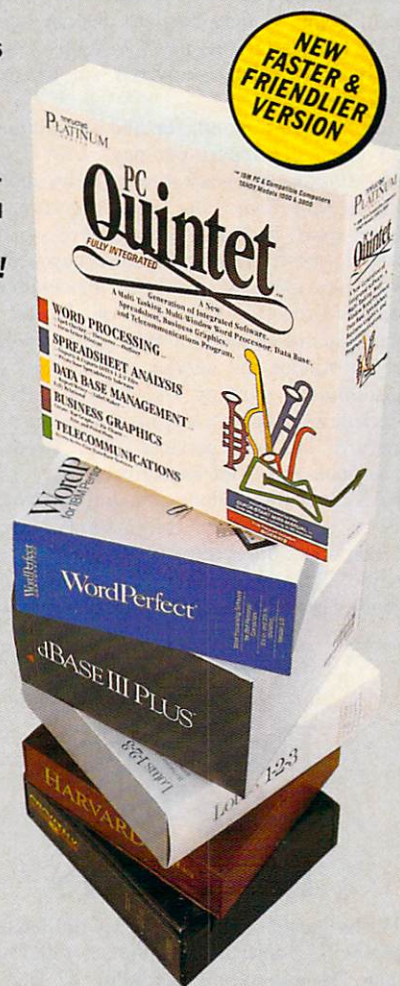
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To provide this service, *USA Today Decisionline* is working with US FAX, Inc., a Philadelphia-based company that offers a variety of facsimile services. G.L. Brodsky, chairman and chief executive officer of US FAX, sees tremendous potential for facsimile as a medium for information services. "The possibilities are virtually endless," he says. "Examples include summaries of commodity or currency exchange markets, sports



schedules and ticket availability, listings of cultural events for individual cities, and newsletters on specific industries or topics."

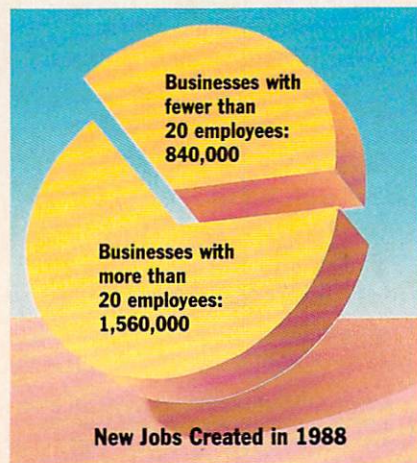
US FAX officials feel the time is right for the emergence of facsimile as a major information medium. The company is working

with various information providers to develop a service analogous to CompuServe. If you are underwhelmed by this development, think of this: no more tipping the paper girl or boy!

—CHRISTOPHER GABLE

Small Businesses Are Big Employers

Thirty-five percent of 1988's 2.4 million new jobs will be created by businesses with fewer than 20 employees, according to Dun & Bradstreet Corp.'s annual Dun's 5,000 survey.



Moonlight Becomes You

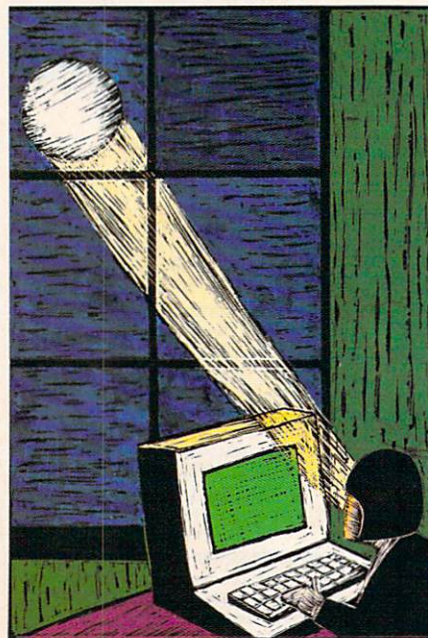
More people moonlight than you may realize. A surprising 15 to 20 percent of the people surveyed by Dr. Muhammad Jamal, a professor at Concordia University in Montreal, Canada, moonlight. Jamal, who surveyed firefighters, blue-collar workers, and clerical workers in the Montreal and Vancouver area, says his numbers are three to four times greater than the U.S. Department of Labor's.

Although Jamal didn't study white-collar workers, he believes the incidence of moonlighting among that group is even greater. "If you use a broad definition of moonlighting to include anyone who has a primary full-time job and, in addition, is doing another activity that brings in money, then it would be hard to find any executive or manager who is *not* moonlighting," he says.

Many executive- and management-level workers perform second jobs in bartering arrangements. You may do computer consulting for an accountant, for instance, and, in return, the accountant files your taxes free of charge. Executives often moonlight as consultants, lecturers, seminar leaders, and researchers.

Jamal also says that moonlighters are more likely than single-job holders to belong to volunteer organizations and social groups.

Although they work an average of 11 hours a week at a second job, moonlighters are more energetic, less stressed out, and exercise more than their counterparts. —LISA WU





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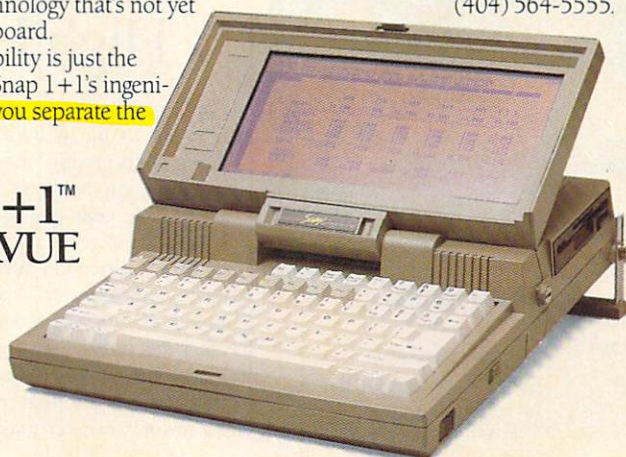
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How to Work Less and Make More

If you work *too* hard for your money (and who doesn't?), read on. Lis Fleming, author of the *Electronic Cottagers' Handbook* and member of HOME-OFFICE COMPUTING's Advisory Board, has tips to help you save time and make more money.

Group activities for efficiency. Rather than jumping randomly from one activity to another, set aside time for particular kinds of work. For example, make several phone calls at one sitting, set aside a block of time for computer work, take care of several errands in one trip, and do record-keeping chores once a day, once a week, or once a month.

Streamline your services. Define and specify the services you'll provide. Resist the temptation to fulfill clients' requests unless you're ready to provide them efficiently. For example, if you're a bookkeeper, clients may ask you to prepare tax forms. But learning tax laws can take up valuable time that could be better spent keeping other clients' books.

Schedule your jobs. If you're working too much, examine your client scheduling. Spread out deadlines. Give priority scheduling to steady customers for whom you do



Lis Fleming: "Your clients are your most important asset."

large projects that bring the greatest profit. Then fit work for other clients into your schedule. *Never* break a deadline promise to any client.

Demand the right price. You should be up to speed and producing quality work when you open your doors to business, so you can price your services in the middle of the local price range. Raise your rates to the high end when

you are well established.

Provide a service that's profitable. If the service your business offers generally commands a low price, think about upgrading. For instance, for data entry the going rate is about \$8 to \$10 an hour, while for word processing it's about \$10 to \$15, based on typing 60 words per minute.

Market your business to clients who will bring you larger projects, ongoing projects, and repeat business. The time will come when you'll have to turn down clients with small one-time projects. If you can't handle a project, refer the customer to another business that can serve him or her well.

Market yourself as a high-quality, special resource. Choose a position that sets you apart from the rest, for example, Computerized Bookkeeping for Today's Small Business. If you're perceived as a special resource, you'll command higher hourly rates.

Remember, your customers are kings and queens. Your clients are your most important asset. Making money and staying in business means providing courteous, prompt, and high-quality service to every client—no matter what size the account.

Why Corporate Workers Quit

Here's the scenario: You've been busting your butt on a critical project for weeks, putting in overtime, cancelling social plans, skipping lunch. But when the project is finished, your boss doesn't acknowledge your efforts. What do you do? You quit.

Sounds drastic? It isn't. Seven out of 10 people quit their jobs because their work goes unrecognized and unpraised or because

their chances for advancement aren't clearly defined, according to a survey of Fortune 1,000 employees conducted by Robert Half International, a personnel recruiting firm headquartered in San Francisco.

Surprisingly, only six percent of the workers cited salary- and benefits-related gripes as the reason for leaving.

—L.W.

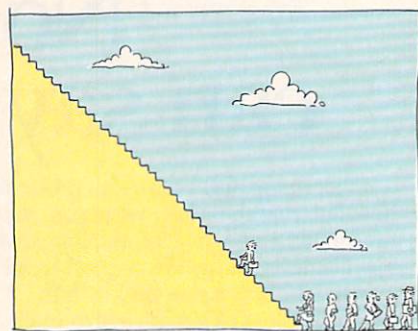
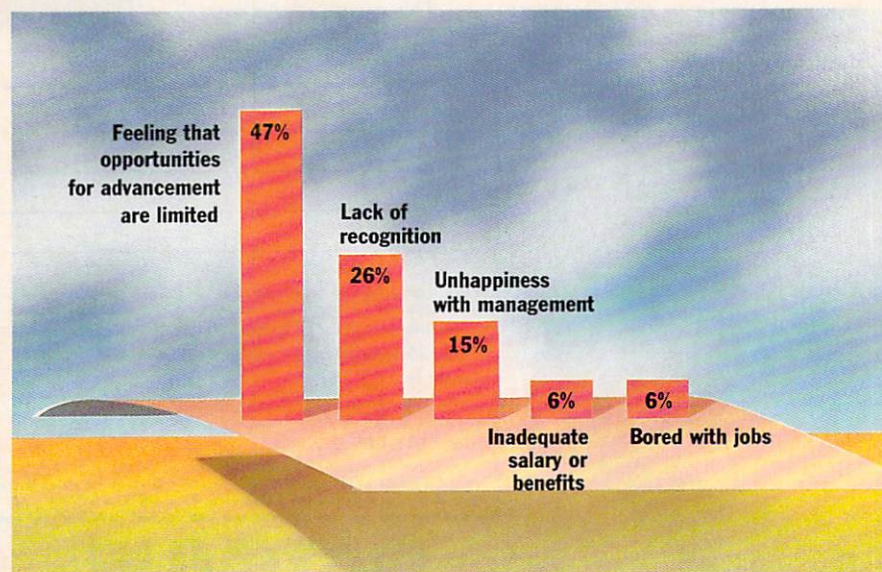


ILLUSTRATION BY MONA MARK

Entrepreneurs Have High Hopes

If optimism is the key to success, all doors are open to the newest wave of entrepreneurs. A surprising one-third of those who have gone into business for themselves within the past year-and-a-half say that their chances for success are 100 percent, according to a nationwide survey, entitled "New Business in America," conducted by the National Federation of Independent Businesses. Either this crop of new business owners never says die, or they haven't heard the widely circulated statistic that only one out of every five businesses ever makes money.

CHART BY BOB CONRAD SOURCE: ROBERT HALF INTERNATIONAL

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2½ percentage points above the prime rate).

The SBA also licenses more than 300 Small Business Investment Companies (SBICs), organizations that lend money to growing businesses. Once-fledgling companies such as Apple Computer and Nike have flourished with the help of SBIC money.

The SBA can direct you to SBICs in your area. (For more info on getting capital, you won't want to miss "How Small Businesses Borrow Big Money," in next month's issue.)

Phones on the Move

At the turn of the century, the telephone was an extravagance. But, in the ensuing decades, it became a home and office essential. Phone lines that connect office to office, home to home, and office to home aren't necessarily good enough: Businesspeople are using cellular phones that can connect people to people.

Professionals in all types of businesses are keeping their phones as close as their wallets and keys so that they can talk it up everywhere and anywhere—on the plane, in the car, and on the beach. There were almost twice as many cellular telephone users in

1987 as in 1986, according to the Cellular Telecommunications Industry Association (CTIA). CTIA reported 1.2 million subscribers to cellular telephone services in December 1987, compared to 682,000 in 1986.

"Today, our users are typically small-business owners and entrepreneurs running their own operations," says Jim Robertello, spokesman for NYNEX Mobil Communications, which services the Northeast. "They're on the road a lot and need to stay in touch with clients. Approximately 90 percent of all cellular phones are car phones."

—L.W.

Uncle Sam Wants You to Start a Business

That's right, the federal government may give you money to launch a business. Two pilot programs beginning in mid-1989 will promote entrepreneurial spirit by paying people laid off by companies to go it alone. Both pilots, available to people who live in Washington and other yet-to-be-determined states, are modeled after the Enterprise Allowance Scheme (EAS) in the United Kingdom, where an estimated 57 percent of the 322,500 EAS-aided new businesses have been successful so far.

Anyone who is eligible for unemployment benefits may be able to start a company while receiving a self-employment allowance instead of an unemployment check. The self-employment allowance will be approximately the same amount as the unemployment payment, provided in weekly or biweekly installments for about six months if you live in certain designated states or in one lump sum if you're a Washington resident.

To give the new entrepreneurs a solid footing, small-business development centers operated by the government, private businesses, and community colleges will offer training and support. They will also coach entrepreneurs on ways to secure venture capital and bid for government and corporate contracts, for instance.

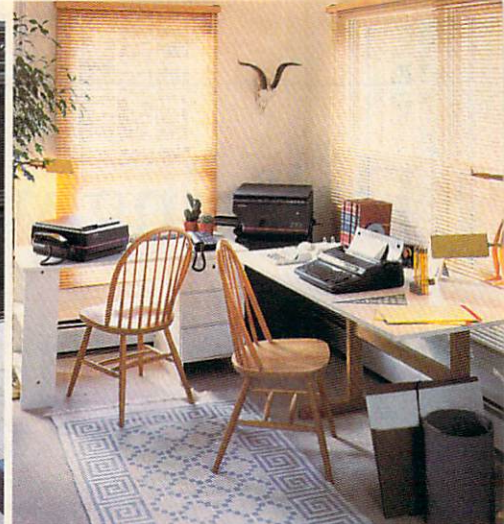
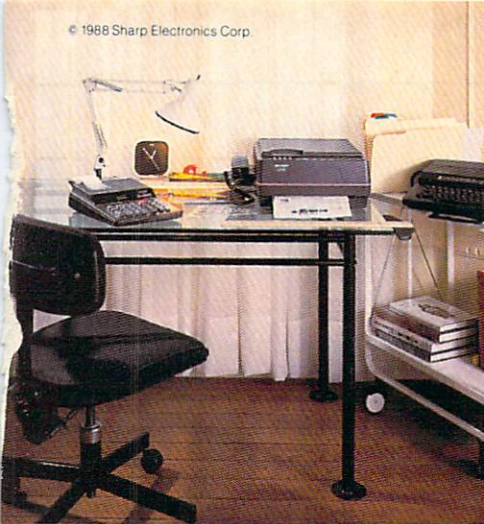
There are few restrictions on the type of business an applicant may launch, according to Jon Messenger, of the U.S. Department of Labor. But he expects the majority of the start-ups to be service based. If the pilot program is successful, it may spread nationwide.

—L.W.



The rural professional and his cowphone.

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Bottom Row: EL-2626 Desktop Calculator; EL-2630 Desktop Calculator; PA-3130 Electronic Memory Intellwriter™

Evolving with the Electronic Species

BY NICK SULLIVAN



Electronically speaking, I'm 10 years old. I started with an answering machine in 1978, added a computer and modem in 1983, a two-line phone in 1985, and a two-way wireless intercom in 1987. This year, I evolved with the rest of the electronic species to embrace the facsimile machine. *Oh, the fax machine!*

With all this electronic equipment around—not to mention two preschool daughters—my house is alive with the sound of rings, squeaks, whimpers, and shrieks. But the jingle-jangle of home-office sounds (including crackling communiqués from my wife over the intercom) is worth it. Not only do electronic communications afford remote work—people can reach me whether I'm home in Massachusetts, at the office in New York, or on the road—they help me work more efficiently.

My daily morning ritual is to take a freshly brewed cup of coffee from the kitchen upstairs to my office and check my electronic mail. I can't imagine having to wait for the morning postal drop to key into the world. Checking e-mail (as we of the species refer to electronic mail) is a pleasant and practical way to get going in the morning. I can fire off a few memos and messages and not even feel like I'm working, whereas I might put off until Friday afternoon the tedious task of writing, printing, addressing, and mailing a traditional letter.

Most people I work with on a regular basis send me electronic mail and manuscripts, either via CompuServe or MCI Mail. Thus, with one or two phone calls (or electronic sign-ons), I can reach almost everyone with whom I work.

Trying to make telephone contact with all the people I e-mail (notice the new verb) in a day might take a week. I would encounter busy and unanswered phones, answering machines, voice-mail systems, secretaries, spouses, and offspring.

The ability to exchange comments daily is a real advantage, particularly when a project is in the formative stages. David Hallerman, a senior editor at HOME-OFFICE COMPUTING, and I often send a file back and forth daily, embedded with comments in capital

letters for emphasis. These and other electronic messages generally stick to the topic, as opposed to rambling phone conversations in which baseball, weather, and movie "news" are admixed with the business of the day.

I know what you're thinking: This man is a recluse, a curmudgeon, a misfit afraid to deal directly with people. Not so! I actually place and receive so many phone calls on most days that I don't like answering the phone at night because the ring reminds me of work. When things are working smooth-



Sarah, Nick, and Lucy Sullivan

With all this electronic equipment around—not to mention two preschool daughters—my house is alive with the sound of rings, squeaks, whimpers, and shrieks.

ly, the phone call should be a prelude to an electronic process. For instance, I just received a call from a San Diego writer who proposed a story. We agreed that he would send an outline via CompuServe.

After an e-mail dialogue, he will send in the goods. I will download the file into my computer, edit it, and send it to the magazine's office via CompuServe. From there it will be copyedited on a computer and sent by modem to the typesetter, who will return galley proofs to the magazine's art department. The galley proofs, and later a layout with photos and headlines in place, are faxed (new verb) to me. *Oh, the fax machine!*

As a rule, I find that modem dealings are most successful with people whom I've met personally or talked to at length on the phone. The electronic medium is flat, two-dimensional. Without the inflections of

voice (the instrument everyone can play), it's easy to attach too much or too little importance to a given statement. That's why so many electronic memos are dotted with signposts such as <<Grin>>, which tells the reader that a gentle ribbing is intended.

I recently e-mailed a memo to a writer I've known by face, phone, and modem for several years, telling him that his article needed some new material to liven it up. The next morning when I checked my e-mail, there was a response saying, "Point taken," followed by the new material. I downloaded it and sent it off to New York and the typesetter. Would that all work were so fluid!

For all the usefulness of the modem, however, the fax machine is a more widely used tool. Only *some* computer people use modems; almost everyone in business uses or will use fax machines. I've been blessed with a fax machine for only a few months. I don't use it in any predictable fashion, but it's clear that I'm in better touch with the main office than I was using just a modem and a telephone.

"There was a memo this morning," or "We got a wild letter today," or "What a photo!"—in the past, these phone phrases clearly placed me in deep left field. Rarely would anyone read a memo or letter to me over the phone *verbatim*, and never would I see a circulated document with everyone's comments on it. These physical "things" that float around an office dictate much of its tenor and atmosphere. The fax machine delivers these goods for me to see, touch, and feel; it brings me right up to the infield, near the action. (To make it to conferences on the mound we would need video conferencing!)

Electronic communications are now so ingrained in my life that I don't think about using a modem any more than I do about using a telephone. I think about the fax machine a lot because it's so new and appears to be the link that really makes remote work possible. The modem is like a radio, which yields a picture of reality only as vivid as your imagination. The fax machine is like a TV, which brings the world parading into your house—with absolutely no effort on your part.

Still, if I were stranded on a desert island with only one communications tool, I'd pick the modem. The modem connects to the computer, which is indispensable. Of course, the island would need a plug and a phone—the *sine qua non* of the electronic species. ■

NICK SULLIVAN, a senior editor of HOME-OFFICE COMPUTING, lives and works in South Dartmouth, Massachusetts. He can be reached on CompuServe (ID: 76703,744) or on MCI Mail (ID: NSULLIVAN).

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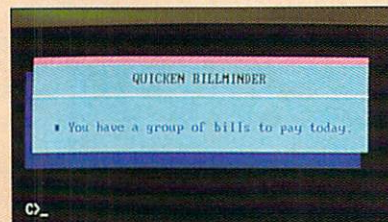
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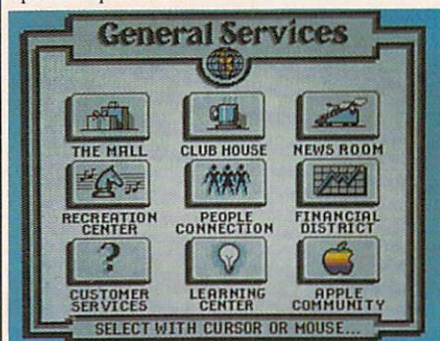
News, Opinions, Quotes, and Rumors About Your Favorite Computer

APPLE II

BY CHARLES H. GAJEWAY

The big news in the Apple II world this month was the unexpected announcement that Claris Corporation had acquired Houston-based Styleware, Inc., makers of *MultiScribe* and the newly announced *GSWorks* integrated program. According to John Zeisler, Claris's vice president of marketing, *GSWorks* will be renamed *AppleWorks GS* when it is reintroduced this fall.

Apple Goes On-line. There's a new on-line service for Apple users, called AppleLink—Personal Edition. The product is a joint development effort from Quantum Computer Services and Apple. Initially available for Apple II users, with a Macintosh version scheduled for later in the year, AppleLink allows Apple users (with modems and an account password) to communicate with each other, as well as to access both general and Apple-specific information and resources. Representatives from Apple Computer host some sections to answer product-specific questions.



AppleLink Personal Edition features special-interest forums, on-line chat areas, guest speakers, news, stock quotes, shopping, reservation services, on-line courses, and an electronic encyclopedia.

The system is relatively affordable, with no charges beyond a \$35 annual membership fee and \$6 per hour connect charge (\$15 per hour prime time). It's also considerably easier to use than existing information services. Rather than learning commands, all choices to navigate throughout the system can be made from pull-down

menus, with or without a mouse. On the surface, AppleLink looks like a super bargain for Apple users; I'll give an in-depth report in the near future.

Apple II vs. MS-DOS. Now that you can buy a full-fledged IBM clone for \$1,000 or less, even some long-time Apple fans are wondering if it isn't time to jump ship. While I agree that Apple II price reductions are long overdue, let's take a look at some very valid reasons why it still makes sense to have a II in your home office.

First of all, the Apple II is a smaller, simpler computer, particularly the IIc and the Laser 128 clone. The self-booting nature of most Apple programs and the less intimidating size and appearance of the machines make them more approachable. In addition, most Apple manuals tend to be less technical and less forbiddingly formal than those for similar MS-DOS products. Mac people are quite happy with their Apple II with *AppleWorks* combination.

Second, the majority of computers in schools are Apple IIs, and many home-office computers double as family computers. If you feel that your children will benefit from having an Apple II to support their computer work in school, and the machine's capabilities won't impose any real penalties on your work, then the II is still a good choice.

CHARLES H. GAJEWAY can be reached on CompuServe (ID: 73357.3577) or on GEnie (ID: C GAJEWAY).

MACINTOSH

BY CHARLES H. GAJEWAY

Lotus Development Corporation rained on my parade when it announced that it had dropped development of *Modern Jazz*, its long-promised enhancement of *Jazz IA*. David O'Connor, director of Lotus's Macintosh products, stated that "the Lotus strategy is to provide 1-2-3 across multiple computer platforms and to be sure they have a high degree of compatibility. . . . *Modern Jazz* didn't fit into that strategy for the long term, which meant it would be a problem

for us and our customers." So instead of the zoomy *Modern Jazz* we were promised, we will get a humdrum Mac version of 1-2-3. This is progress?

Long-time readers know that I regard *Jazz* as the best all-around software package available, and that I felt the improvements slated for *Modern Jazz* would have made the *Jazz*-Macintosh combination the business solution for the 1990s. I recently spent quite a bit of time developing a series of interlocking spreadsheets in Microsoft *Excel*, and instead of gaining respect for a top-selling Mac program, it only made me wish Lotus would hurry up with *Modern Jazz*. I'm not the only one disappointed: Apple Computer negotiated unsuccessfully to acquire the rights to *Modern Jazz* from Lotus, according to a report in *The Boston Globe*.

Lotus has promised to continue support for *Jazz* and will offer a trade-in policy for 1-2-3 Mac for registered *Jazz* owners (who would want 1-2-3 after using *Jazz*?), but I still want *Modern Jazz*. Maybe I can find a beta-test version somewhere . . .

System 6.0. By the time you read this, System 6.0 for the Macintosh should be widely available. System 6.0 offers an enhanced MultiFinder, a MacroMaker, a Map function, and a Zoom feature. I usually recommend upgrading to new system software right away, but there are some preliminary indications that more software than usual will suffer incompatibility problems with System 6.0. I will know more after I put my copy through the wringer. In the meantime, stick with System 5.0 or 5.1.

FullWrite Professional Arrives. Finally, after nearly two years of waiting, during which developer Ann Arbor Software was acquired by Ashton-Tate, *FullWrite Professional* (\$395) has been released, nearly simultaneously with *WordPerfect* (\$495) and Microsoft *Word 4.0* (\$450). I'm in the process of rounding up all three for a head-to-head comparison, but if you have been holding off on buying an advanced word processor until *FullWrite* appeared, go take a look. It integrates text and graphics and has advanced outlining and footnoting systems.

CHARLES H. GAJEWAY can be reached on CompuServe (ID: 73357.3577) or on GEnie (ID: C GAJEWAY).



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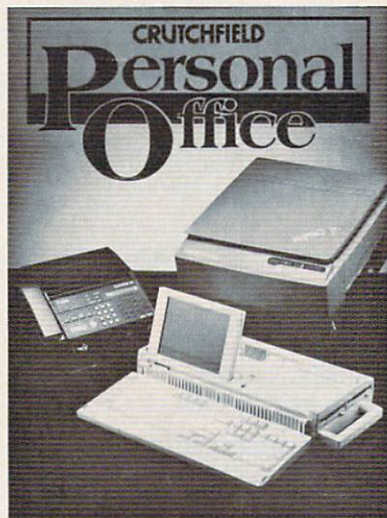
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MACHINE SPECIFICS

IBM PS/2

BY HENRY F. BEECHHOLD

True to earlier assertions that they would keep the hardware coming, IBM has rolled out seven new PS/2s. Among the additions to the line are the Model 50 Z and the Model 70 386, as well as two enhanced versions of the Model 25, now available with a hard-disk drive.

The Model 50 Z (for "zero wait state") is, of course, what the Model 50 should have been from the start, its operating speed (10MHz) is now in line with the capabilities of the 80286 microprocessor, and its disk capacity has been upped to a choice between a 30MB and a 60MB hard-disk drive.

The Model 70 comes in three flavors, with processor speeds ranging from 16MHz to 25MHz, and hard drives as large as 120MB. Clearly, competition from Compaq, which has sold a lot of 386 machines, has had its effect. IBM has also been forced to drop prices; the amounts of the drops vary, depending on the particular configuration you choose.

OS/2 Software on the Way. As part of its new anticipatory marketing style, IBM keeps dropping hints about great things to come. Recent word is that over 300 OS/2 applications, including examples of virtually every category of software, will soon appear. Some of these are IBM's own *DisplayWrite* (Version 4.2), some are OS/2 versions of well-known products from Lotus, Ashton-Tate, and Borland (the OS/2 version of *Paradox* is already out).

IBM's Operating System/2 Application Guide is a 396-page book listing all OS/2 programs under development or soon to be available. Since the database from which the book is derived is changing almost daily, the book won't be published regularly. For an up-to-date list of programs in the OS/2 applications database, check with an authorized IBM dealer, or call the Atlanta Electronic Bulletin Board ([404] 988-2913).

Golden Retriever. Although there are a number of file-searching programs available—including the MS-DOS utility called *Find*—none is quite like *Golden Retriever* (S.K. Data Inc.; \$99), a memory-resident program that can rip along at about 18,000 characters (six pages of text) per second on a 12MHz machine. With a program like this, you can turn your collection of text files into a database simply by issuing the search pattern you wish to match. No indexing is necessary, and because *Golden Retriever* is memory-resident, you can do your searching from within other applications at any time. Using what it calls "Text Pattern Recognition," the program will find not only exact but also approximate matches.

Among *Golden Retriever*'s features is a cut-and-paste facility. Another is the "Proof

File," into which the program dumps all the matches from a given search. This file can be saved and used like any other.

Really Running DOS. To the casual reader of the PC-DOS manual, the DOS Batch file facility may seem mysterious and not worth using. After all, you can run your computer without it. And if you've invested in *Xtree* or some other DOS "Shell," why worry about batch files?

Actually, DOS is a lot more powerful than you might think, and using it properly, you can construct your own customized menu system. How? One way is to use *Beyond.Bat* (Relay Communications; \$99), an extension to DOS that is really a DOS shell development system that enables you to create customized menus and help screens. The program includes a script language (a superset of DOS commands), a full-screen editor, a screen-panel handler, and a huge library of examples. The extent of the program is suggested by the size of the manual, 374 densely packed pages. You need to have some programming savvy, but you'd be surprised at what nifty menu systems you can construct with relative ease.

HENRY F. BEECHHOLD is author of *The Brady Guide to Microcomputer Troubleshooting & Maintenance* (Brady Books, Prentice Hall Press, New York).

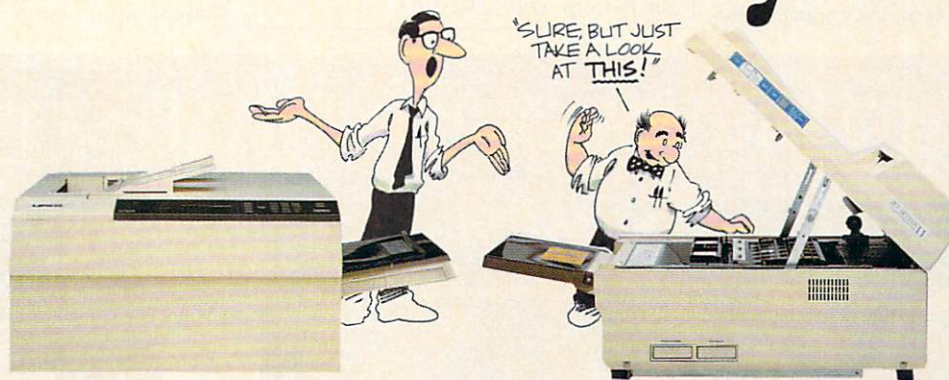
MS-DOS

BY STEVE MORGENSTERN

VGA graphics, introduced by IBM on its PS/2 line, is the one PS/2 standard that has really infiltrated the MS-DOS world. When the EGA graphics standard was first introduced, software publishers seemed to drag their feet in supporting it. Today, though, MS-DOS users have clearly demonstrated their hunger for better graphics. The Windows and (upcoming) Presentation Manager graphic interfaces are attracting lots of attention. The top word-processing programs, including *WordPerfect* and *Microsoft Word*, have increased their capabilities to include graphics images in text documents. The time was ripe for a higher-resolution display in the IBM-compatible world, so when VGA came along, it quickly gained the software support required to create a true hardware standard.

Add-on hardware manufacturers initially had serious problems achieving high levels of compatibility with the VGA graphics capabilities built into the IBM PS/2 Model 50, 60, and 80 machines. The latest crop of VGA boards has minimized this problem, though it is still an issue. It is wise, therefore, to shop for the latest-model VGA board released by one of the major manufacturers, such as Paradise Systems or Orchid

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Dell 220. If you're shopping for a new computer today, strongly consider buying one with VGA graphics capability installed. There are, of course, two components required for any computer graphics installation: a display adapter and a monitor. The display adapter is usually an expansion card mounted in an expansion slot, but we are starting to see machines (such as the screamingly fast Dell 220) with a VGA adapter built right onto the system board, saving the slots for other purposes.

By the way, a friend recently became the proud owner of a Dell 220 computer. It soon became apparent that there were erratic problems with the system RAM. He called Dell Computer Corp., which offered several possible solutions. When none of them worked, Dell called Honeywell Bull, the nationwide computer-service chain, and had a repairman at my friend's house within 24 hours to replace the system board. The cost? It was fully covered under warranty.

Look for a review of the Dell 220 and a first-person account of the fix-it story in an upcoming issue.

A New Kind of Software Support. When you pick up the phone and call for technical support for a troublesome piece of software, you can generally expect busy signals, end-

less canned music while waiting for the next available representative, and advice that may or may not be appropriate to your particular problem. And you're not the only one unhappy about the situation—even software publishers dedicated to providing top-quality service are hard pressed to keep up with the sheer volume and diversity of questions that crop up.

Next time, you might do better leaving your phone on the hook and letting your modem do the calling. On-line software support is becoming increasingly popular, and for good reason.

Publishers can place technical information in a standing data library, allowing many users to find the answers they seek by themselves.

When a personal response from a service

technician is required, the problem can be explained in an on-line message from the service department. The process is more efficient for all concerned.

Some publishers are establishing their own on-line bulletin boards. Mediagenic (formerly Activision; [415] 329-7674), Logitech (the mouse manufacturers; [415] 795-0408), and Ashton-Tate (*dBase III Plus*; [213] 538-6196 for 1200-baud and [213] 324-2188 for 2400-baud) have taken this approach. Others have established product support forums on commercial on-line services. CompuServe is a leader in this regard, with publishers including Adobe, Aldus, Borland, Digital Research, and Microsoft represented. Additional support forums are found on The Source and GENie.

In addition to answering technical support questions, on-line product support often provides downloadable templates, bug fixes, and data files to be used with the company's software.

Based on my recent experience with on-line support from several vendors, I'd say these valuable services easily justify the expense of buying a modem, if you don't already own one.

STEVE MORGENSTERN can be reached on CompuServe (ID: 72545,606).

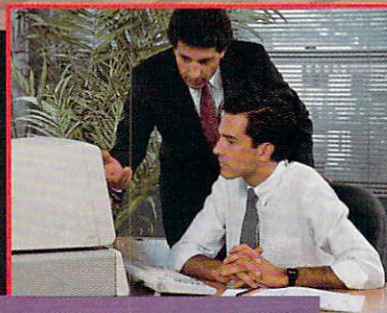
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TANDY

BY STEPHEN MILLER

When Tandy came out with the 1000 HX—with MS-DOS built into ROM so the machine booted without needing a disk—I raved about it. However, there is just enough DOS in the HX to power up the computer. In the new 1000 SL (\$899 without monitor) and 1000 TL (\$1,299 without monitor), many of the supplemental DOS functions, such as FORMAT and DISK-COPY, are also built into ROM. The large (512K) ROM also holds part of *DeskMate 3.0* and an 80,000-word spelling checker.

Price Hike for 1400 LT. In the five years that I have been covering Tandy, I can't remember a price hike in their computer prices, but it's finally happened. The price of the Tandy 1400 LT laptop was increased by \$200, to \$1,799. No Tandy spokesperson is blaming the increase on the shortage of memory chips, but that seems a reasonable explanation.

There's some good news to go with the bad, at least for 1400 LT owners craving a hard-disk drive. CMS Enhancements is shipping the LiteDrive-II (\$999), a 20MB hard drive for the 1400 LT. The LiteDrive-II, probably best installed by a dealer, fits in one

of the floppy drives and needs a new controller to work properly. The drive will add two ounces to the 13.5-pound LT.

Be forewarned that if your 1400 LT is still under warranty, having the LiteDrive-II installed by anyone but an authorized Tandy technician will void it. I'll report further on the LiteDrive-II when I get one to evaluate.

The Drive A—Drive A Shuffle. With the transition from a 5.25-inch floppy-disk standard to the 3.5-inch standard, too many of us have drives to accommodate both formats in our computers. It's a real convenience when transferring files from one format to the other, but what happens when you want to copy files to the same format but on a different disk? If you try to copy a file to the same drive, you receive the "File cannot be copied onto itself" error message. For two-drive systems with 3.2 or 3.3 MS-DOS, Tandy offers the following solution to the file-copying problem.

To copy a file from a 3.5-inch disk to another 3.5-inch disk in the same drive, create a CONFIG.SYS file that contains the following statement:

```
DEVICE=DRIVER.SYS/D:0 /F:2 /H:2 /S:9 /T:80
```

The file DRIVER.SYS must be in the root directory of the disk you use to boot.

This command is designed for drive A. If your 3.5-inch disk is in drive B, then change /D:0 to /D:1 in the above command. Reboot the system to install the device driver, then type:

```
COPY A:FILENAME.EXT C:
```

This command copies the file and prompts you for disk changes at the proper time.

Likewise, a similar statement may be used for a 360K drive B. The entry for doing this is:

```
DEVICE=DRIVER.SYS /D:1 /F:0 /H:2 /S:9 /T:40
```

To use this command for a 360K drive A, change /D:1 to /D:0. The command COPY B:FILENAME D: will copy a file from Drive B to logical Drive D, again prompting for diskette changes at the proper time.

Both the above procedures assume that you do not have a Drive C or Drive D installed, as they trick the computer into thinking that Drive A is also Drive C, and Drive B is also Drive D. ■

Contributing editor STEPHEN MILLER is host of the hardware forum on Tandy's PC Link on-line service.

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CIRCLE READER SERVICE 43

Tax Deductions, Finding a Business, Grading Programs for Teachers

BY JOANNE H. PRATT



Are you eligible for any home-office tax deductions? Employees and business owners alike will profit from reading *Home-Office Tax Deductions* (Enterprise Publishing, Inc., 725

Market Street, Wilmington, DE 19801; (800) 533-2665; \$19.95, tax deductible). Author Thomas Vickman leads you step-by-step through the tangle of Internal Revenue Service rulings. You'll learn the tests that your home activity must pass; the changes that would qualify your home office for a tax break; how to calculate your deductions; and how to minimize taxes when you sell your home. The straightforward charts and explanations even include a floor plan and the arithmetic computations necessary to determine the office area of your home.

What surprised me most was that a tax manual could be such fascinating reading!

Q. My wife and I are expecting our first child. As an alternative to her returning to work outside of the home, we are considering running a word processing—desktop publishing business out of our home. We have an IBM PC and a Hewlett-Packard LaserJet printer and would like to earn income in an area of business we enjoy. I am concerned about the prospects of getting an appreciable return on this significant investment. Is there, in fact, a real need for this service in this age of computers on virtually every desk?

What is the missing link between a document you prepare using desktop publishing software and the glossy brochures you see?

JOHN M. SULLIVAN
Miamisburg, Ohio

A. To achieve the classy appearance of a glossy brochure, it takes money to pay for professional design, typesetting, and color printing—a cost that is well worth the investment if it increases sales and profits.

I, too, am concerned about the long-range potential of word processing and desktop publishing services. Those businesses with

the top equipment, breadth of services, and owner perseverance will have the competitive advantage. They will capture the market of people who find it most efficient to contract out those services.

Some entrepreneurs may want to spend their energies in other ways. Look beyond the computer to think of service-oriented businesses other than word processing and desktop publishing that the computer can make more efficient. To trigger your imagination, scan the long list of home-based business occupations in Appendix D of *Planning Your Own Home Business*, by Coralee Smith Kern and Tammara Hoffman Wolfram (VGM Career Horizons, 4255 West Touhy Ave., Lincolnwood, IL 60646-1975, 1986).

Or you could supplement a word processing business by writing and publishing for specific markets. While her children were young, Laura Trim wrote and published a guidebook, *Short Trips In and Around Dallas* (\$12). Now in its second edition, the book sells very well in local bookstores. She had the fun of combining a business and outings with her children.

Similar types of publications that you could turn out on your computer include well-researched guides to childcare facilities, schools, or underground shopping in the greater Dayton area or homeowners' referral lists of reliable plumbers, electricians, and home services.

Another idea is to build the business by publishing updated editions of the guides for the Wright-Patterson Air Force Base in Dayton. Consider offering guided trips or other related services that you would enjoy.

Q. I would like to use my IBM PC compatible to post, record, average, and summarize school class grades and attendance for teachers. I haven't seen programs for this service. Is this a need that has not yet been covered?

ROBERT A. BRILHART
Miami, Florida

A. Teachers were quick to recognize that the computer could speed up grade averaging and attendance tracking. There are many

grade and attendance recording programs available for the IBM PC and compatibles. Look into *Classmate*, \$50, from Davidson & Associates, (213) 534-4070, and *McGuffey's Grader*, \$60, from Midwest Software, (313) 477-0897. A review in *Teaching and Computers* (published by Scholastic Inc.), a magazine for elementary schoolteachers who use computers, gave good marks to two other grading-only programs for the IBM PC and compatibles: *MicroGrade*, \$65, from Chariot Software Group, (619) 298-0202 and *Report Card*, \$60, from Sensible Software, (313) 528-1950.

Q. A few days ago, I received my very first copy of your magazine. In your June column, you mention exactly what I am looking for to help my wife's supervisor figure out schedules for nurses' shifts. How can I get a copy of the January issue, which presents an administrator's spreadsheet model?

HANS CLAHSSEN
Bullard, Texas

A. You can obtain a back issue by sending \$4.25 to Back Issues, HOME-OFFICE COMPUTING, P.O. Box 717, Cooper Station, New York, NY 10276-0717. Please allow four to six weeks for delivery.

Anyone who saves magazines for reference should try the new type of Post-it called Tape Flag, by 3M. I prefer it for marking articles because the transparent adhesive strip doesn't cover up the copy, and I can write notes on the bright-colored end.

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Save Learning Time By Making Your Spreadsheet Do Double Duty as a Database

BY ROB KRUMM

How? With These Step-by-Step Instructions

Last week, acquaintances who run a mail-order pottery and porcelain business called for some advice. Sara and Ken wanted to position one of their two computers by the telephone so that when a customer called with an order, all they had to do was type in the name of each item. Then they wanted the computer to spit back such details as price, description, and shipping costs. Although Sara and Ken made some merchandise on their own (particularly vases), most of their stock was imported, and all of the items were named after cities—Venice, Kyoto, Dublin, and so forth.

As I saw it, their basic task was to search long lists of information for individual details. A database might have worked well for Sara and Ken, except for one problem: They spend most of each day at the computer using a spreadsheet (Lotus 1-2-3) for analyzing their income and expenses, for budgeting money and supplies, and for keeping track of inventory.

Yet their spreadsheet can also search worksheet documents using what's called a "lookup" function. This function is designed to hunt through an appointed area and retrieve information related to either a numeric value or the text you targeted in your search. Spreadsheets such as 1-2-3 (or compatibles), Excel, and Quattro can all scan lookup tables for information. Follow along with your own spreadsheet as I demonstrate a simplified version of my suggestions for Sara and Ken.

FIRST STEPS FOR ORGANIZING DATA

When you organize data for later searching, the first task is to decide on categories of information. For my friends' purposes, I listed four categories: item names, short descriptions, retail price, and shipping charges.

ROB KRUMM wrote "Making Successful Financial Decisions with a Spreadsheet" in the June issue.

PARTS OF A LOOKUP FUNCTION

A: A spreadsheet's status line shows the content of the active cell. Here, using Excel on the Mac, cell B2 contains the vertical lookup function, =VLOOKUP(), along with its required three references.

B: The first reference in a lookup function is to the cell that contains the value or text being sought. In our example, cell B1 holds the item name "Munich."

C: The second reference is to the range of cells that contain the lookup table, which is a section of the worksheet that the lookup function uses to search for specific items (see E). Any lookup table is measured from the upper left cell (A11 in our example) to the lower right cell (D15).

D: A lookup function's third reference is to the specific item in the table that you want to retrieve. Lotus 1-2-3 calls this reference the "offset value"; in Excel the term is "index number."

Item	Description	Price	Shipping
Ann Arbor	Ashtray, merblesque	10.95	1.75
Kyoto	Miniature bells, white	29.95	2.75
Munich	Beer mugs, set of 12	59.95	3.25
Nairobi	Figurines, set of 6	119.00	5.00
Venice	Vase, classical blue	25.95	2.50

E: Any lookup table must be arranged in ascending alphabetical or numerical order, according to the text or value being searched for. Since we're searching by item names—and they're listed in a column rather than in a row—we'll use the vertical lookup function,

=VLOOKUP(), instead of the horizontal lookup function, =HLOOKUP(). Note that the headings in row 10—Item, Description, etc.—are there for clarity only and are not counted as part of the lookup table.

F: In a real-life situation where a lookup procedure would be practical, the table would be much larger and in another section of your worksheet. In our example, the lookup function in cell B2 pulls in the data from cell B13.

For your lookup tables, the list of categories can be any length that will fit onto a single worksheet.

In this instance, the goal is to enter the name of the item and be given back its description, price, and shipping cost. The key to this operation? Using the lookup function to search the worksheet for text that matches the item name entered in cell B1 (see figure for worksheet).

In order to make any lookup function work, you must enter into the function three references to other cells and values.

1. The cell that contains the value or text you're searching for.
2. A range of cells—the lookup "table" that needs to be searched.
3. The "offset value" (used in 1-2-3) or "index number" (Excel's term).

For Sara and Ken, the first reference is cell

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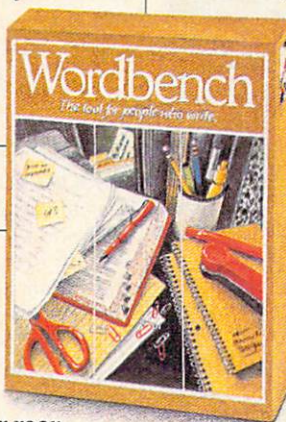
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SPREADSHEETS

B1, which contains the name of one of their products (Munich) that they're using for the search. The second reference, the lookup table, is a group of cells that contain data arranged by category. In our example, the table is measured in a range from the upper-left cell (A11) diagonally through to the lower-right cell (D15). You'll want to remember that the left hand column in this table should contain the items by which you'll be searching. The other columns hold the various bits of data to retrieve along with the search item.

The third reference—called the offset value or index number—tells the spreadsheet which item in the table will be retrieved. In our example, the name of each item has three related elements entered to its right: description, price, and shipping cost. Using 1-2-3, you assign an offset value of 1 to the description because it's the first data element following the item for which you're searching. The second data element over, price, is assigned an offset value of 2. If there's a third data element—shipping costs in this case—its offset value is 3, and so on.

Excel works in a slightly different manner. It gives an index number of 1 to a lookup table's first column, the one that contains city names in our example. The description then has an index number of 2 because it's the second column of the table. Price is indexed as 3 and shipping as 4.

HOW TO BUILD A LOOKUP TABLE

You have at least two kinds of lookup functions with *Excel*, 1-2-3, and most other spreadsheets: **VLOOKUP()**, vertical lookup, and **HLOOKUP()**, horizontal lookup. Both functions operate in the same manner, except for the direction of their search. For example, the **VLOOKUP()** function would begin to search our table at the upper-left cell A11 and continue down column A until it found a match or reached the end of the table. An **HLOOKUP()** function would also begin to search our table at the same upper-left cell. However, it would continue its search horizontally to the right in row 11, moving across the row until a match was found or the end of the table reached. Note that with either function, search items in the table must be listed in ascending order, either alphabetically or numerically. Our example requires **VLOOKUP()** because the city names are listed vertically, not horizontally.

Now that you know the parts of a lookup table and its corresponding pair of lookup functions, we can put these pieces together into a formula that—when given a city name—will find the item's description, price, and shipping costs. The item's name (Munich) will be entered into cell B1. A lookup function won't work properly unless the spelling of the text to be found exactly matches the item name in the table. In 1-2-3, this need for an exact match includes the case

of the letters; for example, if you enter "venice" into 1-2-3, it will not match "Venice" in the table. *Excel* is not as fussy.

Now, enter the first formula below into cell B2 if you're using 1-2-3 or compatibles, the second if you're using *Excel*:

**@VLOOKUP(B1,A11.D15,1)
=VLOOKUP(B1,A11:D15,2)**

The formula causes either spreadsheet to use the city name entered in cell B1 as the key item or search value. It then compares that value to A11, the first cell in the table. If they do not match, the program continues down column A until a match is found or the end of the table is reached. In this example, a match will occur in cell A13. This means that the spreadsheet will draw the description, price, and shipping cost from row 13.

1-2-3 then uses its offset number or *Excel* its corresponding index number to determine what information to retrieve. In this case, the value 1 tells 1-2-3 to retrieve the data one column to the right of the key-item column. For *Excel*, the value 2 says to retrieve the data in the lookup table's second column. In our illustration, the description of the Munich pottery is in cells B2 and B13.

To retrieve the price, you would enter another lookup formula into cell B3. The only difference between the formulas in B2 and B3 are the offset or index values; both retrieve the same value. Lotus 1-2-3's formula in cell B3 will use an offset number of 2 to indicate that the item 2 columns to the right of the key value is the one that should be retrieved; *Excel* will use an index number of 3. Enter the first line below into cell B3 for 1-2-3, the second line for *Excel*:

**@VLOOKUP(B1,A11.D15,2)
=VLOOKUP(B1,A11:D15,3)**

Finally, to get the shipping costs, enter the first line into cell B4 for 1-2-3, the second line for *Excel*:

**@VLOOKUP(B1,A11.D15,3)
=VLOOKUP(B1,A11:D15,4)**

You can apply lookup formulas to several types of tasks that require you to locate specific items or values in a table. Lookup can help you reference all kinds of lists, including client names and addresses, a product inventory, and an organization's membership. Accountants and bookkeepers find lookup functions helpful when setting up IRS tax tables. Sales managers might want to use their worksheets to track their salespeople's sales and commissions with a lookup table. Think of the lists that you work with (especially where numbers are concerned), and you can probably find your own good use for the powerful twin lookup functions. ■

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Making Money the Electronic Way

BY RIC MANNING

Local Bulletin-Board Operators Earn Money Through Advertising

Buffalo, New York, 11:43 p.m.

Jake the Jam and Krazi Karen are just getting into some serious conversation on the local computer chat line. Suddenly a message scrolls by touting a sale on floppy disks at a downtown computer store.

A commercial on a local bulletin-board system (BBS)?

You bet. Somebody has to pay for the seven telephone lines and the computer hardware and software that keep Gary Bacchetti's American Link Line Network up and running around the clock. And on Bacchetti's BBS in Buffalo, advertisers foot most of the bill.

In other cities, as well as in Buffalo, BBS users are paying monthly or annual fees for access to well-stocked communications systems. Some home-grown systems charge users by the minute, just like such national networks as CompuServe, Delphi, GENie, The Source, and QuantumLink.

With a growing number of computer users willing to pay for such on-line services as chat lines, conferences, and access to public-domain software, BBS operators are discovering that running a system can be more than a labor of love. For some, it's become a money-making proposition.

A BBS THAT GROSSES \$30,000

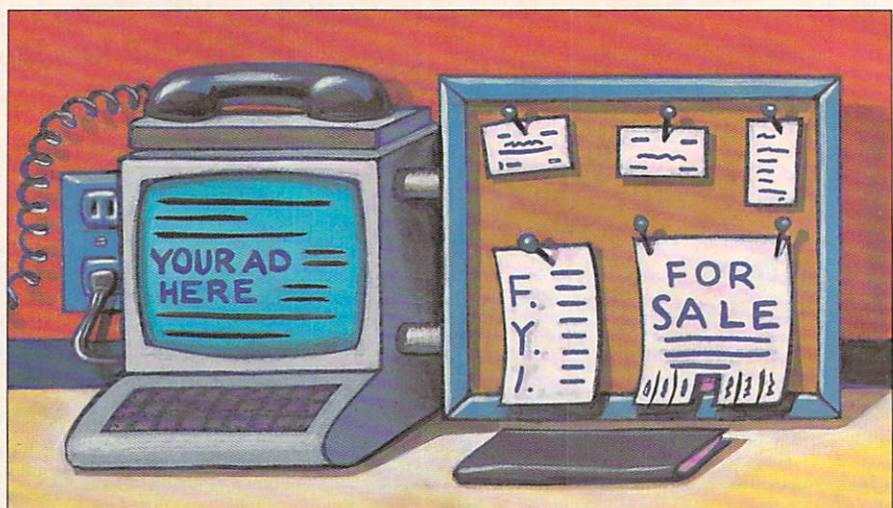
Last spring, Bacchetti had six advertisers who paid \$400 a month to have their messages displayed on his system. Bacchetti says the service was bringing in about \$30,000 a year.

"I think advertisers are watching this concept very closely," he says. "It's a highly specialized medium. You won't have McDonald's on it, and you're not going to use it to sell to the masses. But if you want to reach a target audience for a computer store, for example, it's perfect."

Bacchetti also charges subscribers \$10 a month for unlimited use of the system. Next year, when he enhances the system, he plans to charge subscribers \$29.95 per month for unlimited access, or \$2.25 an hour.

SELLING SKI REPORTS

Another system operator, or sysop, using advertising to support his BBS is Jay Mel-



nick, operator of the Colorado TravelBank near Denver. Melnick uses The Bread Board System (TBBS) software (eSoft Inc.; \$895) to support a multiline system. He calls it an "electronic magazine you can talk back to."

The system delivers information about outdoor activities, including bicycling and hiking, mountain excursions, and white-water rafting. The system is particularly busy in the winter when it posts daily ski conditions and road and weather reports from throughout the state. And this winter Melnick will expand coverage to all ski resorts around the country.

A trade group for the ski resorts provides the reports, and the state police contribute road information. Melnick's profit comes from the resorts, outfitters, equipment stores, tourism offices, and rental car agencies that pay \$25-\$150 per month to post information on the BBS.

TravelBank has an electronic "bingo card" that callers can use to request more information about any of the services. "The clients can call up and download a list of people who want information and even get it in mailing-label format," Melnick says.

CHARGING BY THE HOUR

Other local systems, such as Philadelphia's ONIX—the Online Network for Information Xchange—charge users by the hour. ONIX's \$2 an hour or \$19 per month fee is less than half the rate charged by even the least expensive national networks.

Callers to ONIX can access thousands of public-domain programs, special-interest conference sections, multiplayer games, and even a CB simulator. The system uses Galacomm's Model 16 Multi-Modem card

(\$5,980) with *The Major BBS* software (\$59), which currently supports 16 callers on an AT-compatible computer.

Brian Raub, one of three partners who started ONIX, says the system receives about 6,000 calls a month. So far, it returns a small profit that the partners are putting back into the business. "It's not going to make a ton of money," says Raub. "But someday it could be a nice bit of income." Raub says he's considering spinning off new ONIX systems in other cities.

Another local system that's doing well is Mike M. Stroud's Micro Message Service, a five-line system in Raleigh, North Carolina. Stroud charges \$25 a year for unlimited access to a range of software and 54 conference areas.

Stroud says about half of his callers come from outside the Raleigh/Durham area. Many call the system through PC Pursuit, a Telenet service that allows unlimited after-hours data calling for a flat monthly fee. With PC Pursuit, says Stroud, "I'm starting to see myself as a national service." ■

PHONE NUMBERS FOR BULLETIN-BOARD SYSTEMS

American Link Line Network, Buffalo, NY (716) 823-1277 (voice); Colorado TravelBank, Denver, CO (303) 671-7669 (data); ONIX, Philadelphia, PA (215) 896-9020 (data); Micro Message Service, Raleigh, NC (919) 779-6674 (data).

BBS SOFTWARE

eSoft Inc. (303) 699-6565 (voice); Galacomm Inc. (305) 583-5990 (voice), (305) 583-7808 (data).

RIC MANNING writes a computing column for *The Courier-Journal* in Louisville, Kentucky.



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Can a Grammar or Style Checker Really Help Your Writing?

BY GEORGE CAMPBELL

To: All Sales Staff
From: The Boss
Subject: Third Quarter Sales

How can you expect a business letter or proposal to sway its intended audience if the language is not clear and powerful? You can't, and, unfortunately, the impact of the final document depends on only one person—you.

If you're using a modern word processor, such as *WordPerfect* or *Microsoft Word*, a built-in spelling checker takes care of the most basic proofreading chore. What's missing is a checker to help spot errors of writing style, punctuation, and grammar.

Fortunately, there's software on the market designed to do just that. By using one of these programs—often called a style checker—you can detect and correct common writing errors, adding strength and clarity to your documents. If you use a style checker regularly, you'll probably improve your writing skills.

There are two basic types of style checkers. The first simply gives you a report, rating the document for readability and listing general suggestions for improvements. *PC-Stylist* is an example of this type (see page 35 for software information). More useful, however, are programs that catch and identify individual errors and then list them between the lines of a second, automatically created back-up version of the document on which you're working. Both *RightWriter* and *Grammatik III* for MS-DOS computers do this. *MacProof* and *Sensible Grammar* work similarly for the Macintosh, and there's an Apple II version of *Sensible Grammar* as well.

HOW DOES A STYLE CHECKER WORK?

To demonstrate how these programs work, let's take *RightWriter* through its paces. This program can import documents created by several word processors—including *Microsoft Word*, *WordStar*, and *MultiMate*—without any formatting changes. If you use another program, such as *IBM's DisplayWrite 3*, you'll have to save the document as ASCII text first.

Once a document is finished, save it and exit the word processor. Next, give the

After reviewing the numerical figures for the third quarter, with an eye toward the fourth quarter, <<28. NOT A COMPLETE SENTENCE >> it has come to my attention that, despite all my efforts the sales staff has done what is essentially a terrible, lousy <<6. COLLOQUIAL: lousy >> job. <<17. LONG SENTENCE: 23 WORDS >> The current status <<13. REDUNDANT: REPLACE current status BY status >> of sales this quarter has been truly <<33. PARENTHESIS NOT CLOSED >> (if anything is true around here disgusting.

Keeping that in mind, it is expected <<21. PASSIVE VOICE: is expected >> that all members of the sales and marketing department will double their efforts for the fourth quarter, engage in a lot less coffee drinking and fooling around <<6. COLLOQUIAL: fooling around >>, and get out there and do what they're supposed to be getting paid for <<31. COMPLEX SENTENCE >> <<17. LONG SENTENCE: 48 WORDS >>

Any failure in this regard will be quickly rewarded <<21. PASSIVE VOICE: be quickly rewarded >> by immediate and expeditious <<7. REPLACE expeditious BY SIMPLER fast >> termination. It is expected <<21. PASSIVE VOICE: is expected >> that each and every <<2. WORDY: REPLACE each and every BY every >> staff member will put his shoulder to the wheel <<12. CLICHE: shoulder to the wheel >>, his nose to the grindstone <<12. CLICHE: nose to the grindstone >> and keep his eye on the ball <<12. CLICHE: on the ball >> throughout this entire sales period <<31. COMPLEX SENTENCE >> <<17. LONG SENTENCE: 33 WORDS >> I expect immediate, fast and timely results.

<< SUMMARY >>
OVERALL CRITIQUE FOR: c:\word4\articles\ba

READABILITY INDEX: 10.64
Readers need an 11th grade level of education to understand.
Total Number of Words in Document: 174
Total Number of Words within Sentences: 158
Total Number of Sentences: 7
Total Number of Syllables: 257

STRENGTH INDEX: 0.00
The writing can be made more direct by using:
- the active voice
- shorter sentences
- fewer clichés
- less slang

DESCRIPTIVE INDEX: 0.67
The use of adjectives and adverbs is in the normal range.
JARGON INDEX: 0.00

SENTENCE STRUCTURE RECOMMENDATIONS:
1. Most sentences contain multiple clauses. Try to use more simple sentences.
14. Consider using more predicate verbs.

<< WORDS TO REVIEW >>
Review the following list for negative words (N), colloquial words (C), jargon (J), misspellings (?), misused words (?), or words which your reader may not understand (?).
EXPEDITIOUS(J) 1
LOUSY(C) 1
TERRIBLE(N) 1
<< END OF WORDS TO REVIEW LIST >>

RightWriter style-checking software "reads" your document, then produces a new file with its comments inserted into the text. The program helps you discover such grammatical errors as incomplete sentences, redundant or clichéd phrases, and use of a passive voice. But when using any style checker, you must also use your own good judgment to know when to accept and when to reject the program's suggestions.

RightWriter command, RIGHT, plus the path and filename of the document. In a short time, *RightWriter* will read and analyze the file, producing a new file.

Now, load this new file back into your word processor. You'll see *RightWriter's* comments inserted into your text, surrounded by the characters <<* . . . *>> for emphasis. The program will identify mistakes such

as missing punctuation, incomplete sentences, and other basic grammatical errors (see figure).

In addition, *RightWriter* will find common errors of writing style and offer advice for improving your work. For example, if your document contains a redundant phrase, such as "current status," the program will mark it and suggest using "status" alone. Similarly, the program identifies sentences that use the passive voice; for instance, it will flag a sentence containing the phrase, "it is expected that. . .," which you might change to read, "I expect. . ."

RightWriter can also catch other writing problems such as using pretentious words or long, complex sentences.

When you reach the end of the *RightWriter* file, you'll see a summary of your document that will assign a reading level to your material. It will also give you "Strength Index," "Descriptive Index," and "Jargon Index" ratings for the writing. These ratings are followed by recommendations for strengthening your writing and a list of questionable words.

Use your word processor to edit the document, using *RightWriter's* suggestions as guidelines, then remove the comments by running *RightWriter* again, this time with its REM (for remove) switch.

The whole process is much like having your writing corrected by a good teacher or editor. As you make corrections, you learn ways to improve your overall writing style.

WHAT ARE THE LIMITATIONS OF A STYLE CHECKER?

Until computers achieve true intelligence, style and grammar checkers will not fully understand language. No program can spot all writing errors, nor will many of the marked "errors" be incorrect.

Software such as *RightWriter* will find only the most common writing errors and is limited to checking business and technical writing. The manual warns that the program is not designed for fiction or poetry. When working with such software, never assume that all its suggestions are correct; the program's advice inevitably contains biases about what makes good writing good. For

GEORGE CAMPBELL, who writes regularly about computing, lives in Los Osos, California.

example, the program might flag the use of a repeated word, but whether or not to repeat any word is a complex issue. Would it be clearer to use "edifice" instead of using the word "building" twice? Probably not. Also, should you give over your authority to a piece of software? You won't develop good judgment by thinking the software knows it all and you don't.

Used very carefully, however, a style checker can help you make dramatic improvements in the clarity and impact of business documents. Those improvements can help the reader understand what you are trying to say, and that's the whole point of writing.

I recommend that anyone who writes memos, business letters, and reports (and who has a basic faith in his or her own writing judgment) invest in a style checker. By using it regularly, you will not only improve individual documents, but all your writing will become clearer and more persuasive.

STYLE-CHECKING PROGRAMS

Grammatik III v1.0 (\$99). A fresh upgrade of the previous version, *Grammatik II*. The Beta-test copy I looked at offers a menu-driven system for checking the style of your text and has many options for checking your material. The program actually breaks down your sentences into parts of speech for checking. *Grammatik III* also includes an editor to allow you to correct errors without reloading the file into your word processor. *Reference Software, Inc.*, (800) 872-9933. *Requires: 512K IBM PC, PS/2; two drives (hard-disk drive recommended).*

MacProof v3.0 (\$195). Checks documents to find inaccurate punctuation, spelling, and poor use of language, such as wordy phrasing ("along similar lines" instead of "similarly") or pretentious words. Since it's a desk accessory, you can call it up within almost any program, not just your word processor. *Automated Language Processing Systems*, (801) 584-3000. *Requires: 1MB Macintosh; two drives (hard-disk drive recommended).*

PC-Stylist v1.0 (\$30, plus \$5 shipping). A shareware program. Unlike *RightWriter* or *Grammatik III*, this program doesn't spot individual errors. Instead, it presents a summary report of the flaws in your document and assumes that you have the skills to correct them. Since it is shareware, however, you can try the program out at little or no cost. *ButtonWare, Inc.*, (800) 528-8866. *Requires: 256K IBM PC, PS/2.*

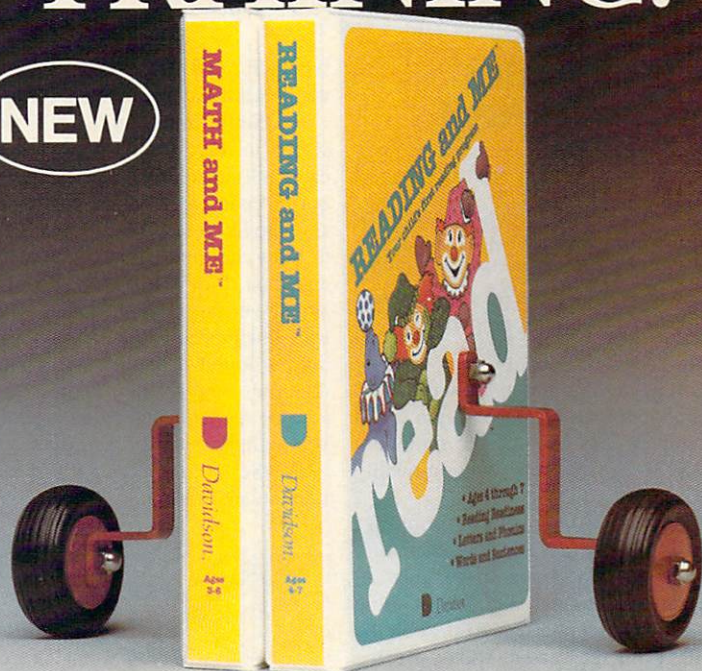
RightWriter v2.1a (\$95). Directly compatible with most word processors and can be used with any word processor that can save files in ASCII format. Features described in text above. *RightSoft, Inc.*, (800) 992-0244. *Requires: 256K IBM PC, PS/2; two drives (hard-disk drive optional).*

Sensible Grammar v1.1c (\$100). Proofreads your documents for punctuation and grammatical errors and commonly misused phrases. While some of the suggestions are helpful, you'll have to use your own knowledge of writing to know when to accept or reject the program's advice. *Sensible Software*, (313) 528-1950. *Requires: 128K Apple IIe/IIc/IIgs; 512K Macintosh.* ■

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Teaching Tools From Teachers

Buyer, Be Aware

BY STEVE MORGENSTERN

Here's Laser Printer Information You Need Before You Buy

EDITOR'S NOTE: *In order to figure out which type of laser printer you need, read this article first. Then turn to the "Buyer's Guide to Laser Printers" on page 67 for complete information about various models.*

If you take your desktop publishing seriously, you will have to purchase a laser printer. The 300 dots-per-inch (dpi) resolution found on laser printers has become the minimum standard for acceptable reproduction-quality output.

Within your first hour of shopping, though, you'll bump up against a potentially baffling phenomenon. There are two classes of laser printers, with—at first glance—little to separate them except price. Almost all the laser printers on the market today use the same Canon-built printer engine, producing the same degree of sharpness and image blackness, at about the same speed. Yet the lower-priced printers, such as the Hewlett-Packard LaserJet and its compatibles, cost about \$2,000, while the higher-priced models such as the Apple LaserWriter IINT, cost two to three thousand dollars more. What's the difference? PostScript.

HOW DOES POSTSCRIPT WORK?

PostScript is a special-purpose programming language, created by Adobe Systems, that describes all aspects of a page—fonts, type styles and sizes, margins, and graphic images—to the printer. Instead of writing programs in PostScript itself, as you would do with any other language, most of us doing desktop publishing use page layout and graphics programs that build the image we want on the screen and then automatically send the PostScript code to the printer.

One key advantage of PostScript is the freedom it provides for creating any type size you desire, such as 10 point or 24 point. On the other hand, typefaces for the Hewlett-Packard and the other non-PostScript laser printers are bit-maps—dot-by-dot descriptions of each letter—stored on disk or font cartridges. Every type size in every type style in this system requires a separate bit-map typeface file. The cost is high in both disk space and money if you use a wide variety of

typefaces; and you're up a creek if you suddenly need a type size you don't have.

PostScript fonts, on the other hand, are a set of instructions describing the shape of each individual letter. For example, the PostScript code for creating the letter "T" in, say, the Helvetica font, would tell the printer to draw the top line, go back to the middle, and then draw the main stem of the letter. When you specify a type size, the printer uses this PostScript description to create the dot-by-dot bit-map ultimately needed to print that font in that size. PostScript fonts can also be rotated, manipulated, and shaded to create impressive special effects.

PostScript graphics can also be sized and manipulated freely. If you draw a company



logo at one angle using PostScript graphics software and later decide to tilt it, the image can be rotated in precisely specified increments without distortion. If that logo will be reproduced in a one-inch square, you can draw it much larger, then shrink it down.

One more important benefit of PostScript is called *device independence*. The same PostScript file you use to create a 300-dpi image on your laser printer can drive a professional Linotronic typesetting machine at 2,540 dpi and take full advantage of the increased resolution. This service costs about \$10 a page, but for those jobs that require totally professional-looking results, it's a worthwhile option and still a lot cheaper than setting type and producing a camera-ready mechanical by hand.

WHY DOES POSTSCRIPT COST MORE?

But why are PostScript-equipped printers so much more expensive than non-PostScript models? I asked Richard Bowles, product development manager for Laser Connection out of Mobile, Alabama, which markets both types of printers. He provided a three-part answer: (1) license fees must be paid to

Adobe Systems, both for the right to use the PostScript language and for the typefaces included in the printer; (2) increased memory requirements—the PostScript code itself takes up about a megabyte of ROM, and you need plenty of additional memory (1MB RAM) to store the bit-map image created as the PostScript commands are interpreted; and (3) additional processing muscle is needed to handle the heavy demands of processing the PostScript instructions.

Do you need PostScript? It depends. If your pages are pretty straightforward, with only a few typesets and sizes, and you are unlikely to need true typeset-quality final output, then you can probably stick with less expensive laser printers, such as the Hewlett-Packard LaserJet Series II (for MS-DOS) or General Computer's Personal Laser Printer and Apple's LaserWriter IISC (for Macintosh). For more complex design work or typeset-quality reproduction, PostScript is the preferred way to go. And despite the announcements of less expensive PostScript-workalike languages "any day now," they haven't hit the market yet. When they do, their level of compatibility with the PostScript standard will have to be proven.

PRODUCT NEWS AND UPDATES

Everywhere you turn lately, it seems, you find Bitstream's *Fontware* system. It's included with *PageMaker 3.0*, *Gem/3*, *WordPerfect 5.0*, *Monitorm* large-screen monitors, and more. What's all the excitement?

Fontware addresses the disk-space problem discussed in this column regarding multiple-size typefaces for Hewlett-Packard LaserJet printers. Like PostScript fonts, *Fontware* fonts consist of descriptions of letter shapes, and the system builds typefaces in the sizes you specify. The major difference is that PostScript does all this as you need it, whereas *Fontware* requires you to create the typeface by choosing the size you need from a menu and saving it to disk before you begin your desktop-publishing session. It doesn't entirely replace PostScript—you can't do fancy special type effects using *Fontware* fonts. However, the printed results at 300 dpi are excellent, and the program even generates accurate screen fonts for a reliable on-screen preview of your final printout. The selection of over 40 typeface packages in several weights includes all the common body-type choices and several handsome display types. For more information about *Fontware* fonts, contact Bitstream at (617) 497-6222 or (800) 522-3668. ■

STEVE MORGENSTERN is a contributing editor for HOME-OFFICE COMPUTING.

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Dollars and Sense 4.0

BY CHARLES H. GAJEWAY

Financial-Management Software that Grows With Your Business

Dollars and Sense 4.0

PUBLISHER: Monogram Software, Inc., 531 Van Ness Ave., Torrance, CA 90501; (213) 533-5120
SYSTEM REQUIREMENTS: 512Ke Macintosh (400K disks available for 512K Macintosh). Versions of *Dollars and Sense* are available for Apple (\$120) and IBM PC (\$180) but vary significantly from the Macintosh version reviewed.

PRICE: \$150

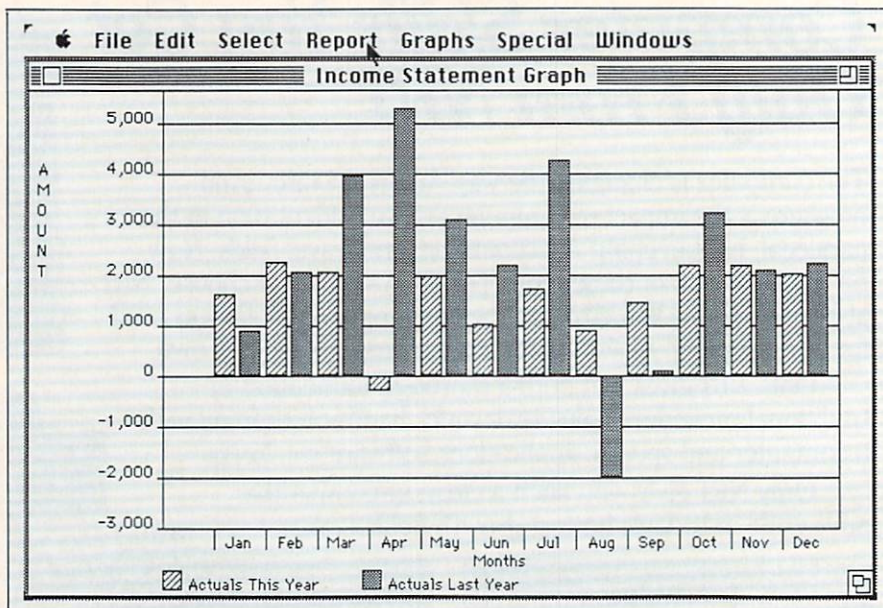
I recently began using the latest version of Monogram Software's *Dollars and Sense 4.0* for the Macintosh and found it ideal for tracking my personal finances and for managing the finances for my consulting and freelance-writing activities. And because the program is designed to expand with your needs, my wife, Teresa, plans to use it for her fledgling word-processing business.

POWER TO GROW

Dollars and Sense 4.0 is a personal financial-management program that combines straightforward ease of use with enough flexibility and power to support the accounting needs of a growing small business. While it lacks some of the modules of a full accounting package (such as payroll, invoicing, and inventory), the program can be customized to handle these functions. It also includes accounting and analysis features, such as automatic double entry, "what-if" analysis, sorting, check printing, and a complete set of predefined financial reports. These features, plus the capacity to process two years of transactions in up to 9,999 financial categories, as well as the ability to export and import data with popular word processors, databases, and spreadsheets, place *Dollars and Sense* in the big leagues of personal finance software.

EASY TO USE

What I like about *Dollars and Sense* is that, despite its power, the program is not intimidating and allows the novice user to pick up and use its features and capabilities progressively. Finance programs that I have tried in the past tended to be inflexible,



You can graph and compare two years worth of data in the latest version of *Dollars and Sense* for the Macintosh.

restricting my ability to modify accounting and report structure and presupposing considerable accounting knowledge. For most small-business owners, the sheer volume of learning and work involved in getting such a system up and running is daunting. But because *Dollars and Sense* requires little knowledge of accounting (at least to start) and can grow to accommodate more and more of your financial structure, the program actually encourages you to expand your understanding and use of its features.

The *Dollars and Sense* user can start small and slow by using the program as a check-book simulator with a minimal number of accounts. Later, as you gain a better grasp of the program and its concepts, you can begin to add accounts, automate groups of regular transactions, and include more of your financial resources, such as credit cards, bank loans, and investments. Then, as your records begin to accumulate, you can use the program to help you create, analyze, and control a budget, as well as generate financial statements—such as income statements, balance sheets, and cash-flow statements—that give you a complete, current picture of your financial status.

DOCUMENTATION AND SUPPORT

The manual is clear and logical, leading you through a brief tutorial that demonstrates

the concept of starting small and growing, as well as explaining basic program concepts and demonstrating most of the key features. The reference section is organized according to the menu structure, with a complete and well-illustrated description of each command. There is even on-screen help that answers your "how" and "why" questions. To complete the picture, Monogram offers phone support (not toll-free) and, for modem owners, a support forum on CompuServe. CompuServe subscribers can type GO MONOGRAM to enter the forum in which they can leave questions for technical support representatives or offer tips for other forum members.

I had no particular problems entering data or using features, and the program operated perfectly on the Mac II under *MultiFinder*, indicating full compatibility. The only criticism I had was the scant mention made of accounting principles and practices, and nowhere is the reader advised to seek additional assistance in setting up a business or personal accounting system. Even a reference to a basic accounting text would be helpful to users with no accounting experience.

Overall, I found *Dollars and Sense* to be an excellent software value. It offers easy-to-use help in managing the range of financial situations that are part and parcel of a home business.

CHARLES H. GAJEWAY is a contributing editor for HOME-OFFICE COMPUTING.

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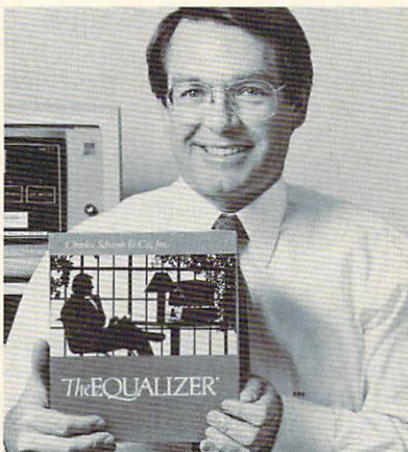
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Readers Ask About GW-BASIC, Security Systems, and *Print Shop*

EDITED BY JEFF DONAHUE

COMPATIBILITY QUESTION

Q. Please explain the actual difference between IBM-compatible computers and MS-DOS computers. Does IBM-compatible software work on MS-DOS computers and vice-versa?

HOLLIE VIZIER
Galliano, Louisiana

A. As far as software goes, the two terms are different in name only. "MS-DOS" refers to Microsoft's version of the Disk Operating System (DOS) software that is necessary to run "DOS" computers. PC-DOS is IBM's customized version of Microsoft's MS-DOS. Since IBM is a dominant force in the market, the phrase "IBM-compatible" has come into vogue, identifying other computers that use MS-DOS. Therefore, yes, IBM-compatible software will work on MS-DOS computers and vice-versa.

As for hardware, be certain to read any

and all fine print that comes with a product. Although MS-DOS machines and IBM machines can run the same programs, the internal architecture of the machines varies. Certain peripherals require your computer to be 100-percent IBM compatible, and you may run into trouble if your machine doesn't meet this requirement.

PRINT SHOP PROBLEM

Q. I am having a problem with *The Print Shop* (Broderbund Software). The cards and signs I print out using my 24-pin printer don't conform to the boundaries of either letter-size or legal-size paper. Is there a special paper size required?

THERESA NORTON
Canyon Country, California

A. Unfortunately, *The Print Shop* is not made for use with 24-pin printers. If you want to

stick with *Print Shop*, you have two choices: Be patient and wait for the updated version, which will be released later this year, or try the NAP Systems software patch. The patch, which allows *Print Shop* to work with 24-pin printers, costs \$40 and is good for any letter-quality printer and MS-DOS computer. For more information, contact NAP Systems, 1120 NASA Road 1, Suite 320, Houston, TX 77058; (800) 527-2851.

EAGER TO LEARN

Q. I recently purchased a PC compatible with GW-BASIC included in the package. The user's manual, however, does not teach GW-BASIC; it merely lists the available commands. Can you recommend a book that will help me teach myself this computer language. Also, what's the difference between GW-BASIC and BASICA?

AMY BERK
Huntington Station, New York

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A. Perhaps the best way to learn BASIC, short of taking a course, is to become familiar with other people's programs, and then try to write your own. A good first step would be to pick up some books of simple BASIC programs for the IBM (most computer dealers stock a few of these) and type them into your computer. When starting out, entering and debugging a program can be a rewarding (and long) adventure! The following are several good sources of information and programming examples:

IBM BASIC From The Ground Up, by David E. Simon (Hayden Book Company, 1983).

Cookbook of Creative Programs for the IBM PC and PCjr, by Robert Rinder (Plume/New American Library, 1985).

Armchair BASIC, by Fox & Fox (McGraw Hill, 1983).

Tim Hartnell's Giant Book of Computer Games, by Tim Hartnell (Ballantine Books, 1983).

Back issues of this magazine, under the name FAMILY & HOME-OFFICE COMPUTING, contained original programs. To order, write HOME-OFFICE COMPUTING, Back Issues, P.O. Box 717, Cooper Station, New York, NY 10276-0717.

Your second question raises an issue that

many people find confusing. BASICA is a version of the BASIC language that Microsoft licenses to IBM. It is the same as Microsoft's GW-BASIC; but IBM changed the name to BASICA.

OVERLY SENSITIVE KEYBOARDS

Q. I have (and can't live without) a Macintosh SE at work and a Tandy 1000 SX at home, and I bet I spend over half my time correcting/deleting extraneous "heavy finger" errors.

Modern-day keyboards are too sensitive. Is there anything that permits me to change the responsiveness of the keyboard or, alternatively, are there any computer-compatible manual or electric-typewriter keyboards?

DAVID E. ULMER
Brookeville, Maryland

A. On your Mac, there's an easy solution to your problem: The Control Panel Accessory on the Macintosh lets you change several features of the keyboard; it includes a function that allows you to choose between repeating and non-repeating keys.

As for your Tandy, we aren't aware of any keyboards similar to the ones you mentioned, but Key Tronic Corp. (P.O. Box 14687, Spokane, WA 99214; [509] 928-8000) has a good selection of alternative keyboards for IBM PC compatibles. Perhaps you can find

one more to your liking among their wares.

HOME SECURITY

Q. I would like to use my personal computer to control a home security system. What hardware and software would I need to set up such a system?

PETER ZAMORY
Trenton, New Jersey

A. We know of a very good system available from X-10 (USA) Inc. for Apple IIe/c, Commodore 64/128, IBM, and Macintosh computers. A complete X-10 system consists of the X-10 Powerhouse Computer Interface (\$50), the X-10 lamp and appliance modules (\$15 each), and the X-10 Burglar Alarm Interface (\$50) connected to a contact closure device (such as a switch on a window or door) or a low voltage input (any type of burglar alarm) device. You can find switches and alarms in most electronics stores.

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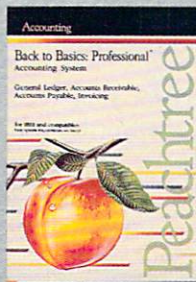
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Macintosh 512K, 512Ke, Plus, SE, Mac II; ImageWriter I, II, or LaserWriter (LaserWriter cannot print checks); and a minimum of 2 disk drives. Hard disk is required for Mac 512K and is recommended for others. Apple II version available without invoicing. Call for details.

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DATA CONVERSION

Q. I have an older CP/M machine with 8-inch floppy disks and a new MS-DOS computer with 5.25-inch disks. I want to transfer the data from the CP/M to the DOS disks, but I do not know where to go to have this done, or if it can be done. I would appreciate any information you could provide.

BOB WARNER
Huntington Beach, California

A. Rest assured that all the data from your CP/M machine will not go to waste. You can try to transfer the data over a modem. This isn't too difficult if the data is in ASCII format. If that method doesn't appeal to you, there are a variety of data conversion and disk duplication services available. A few that you might be interested in are: Corporate Disk Company, (800) 634-DISK; Media Conversion Corp., (312) 858-4566; National Data Conversion Institute, (212) 463-7511; and R Services, (714) 532-5220. Be sure to specify which CP/M format you are using. Also, you might want to call a few of your local computer stores; it's possible that you might find one that has the conversion facilities you need.

TANDY COMPATIBILITY

Q. I've just about made up my mind to purchase the Tandy 1000 TX (mainly because of service availability), but I still have some reservations. One is the non-IBM-standard keyboard—will this cause problems when I run PC-compatible software?

RANDY KINNEY
Rossville, Georgia

A. First of all, Tandy has announced that it is discontinuing the 1000 TX line. If you still plan to buy one, you should know that the keyboard on the TX is only slightly different from the IBM standard. You should have no trouble booting up software, but on occasion, the machine will have problems with certain commands on a few programs. You might want to look into the newer Tandy line: the 1000 SL and 1000 TL. In addition to many built-in conveniences, these machines come with the IBM standard 101-key keyboard, thus ending compatibility and "mushiness" complaints. ■

If you have technical questions or computer ailments that need diagnosis, our technical staff will try to help. Send your letters to: Clinic, HOME-OFFICE COMPUTING, 730 Broadway, New York, NY 10003.

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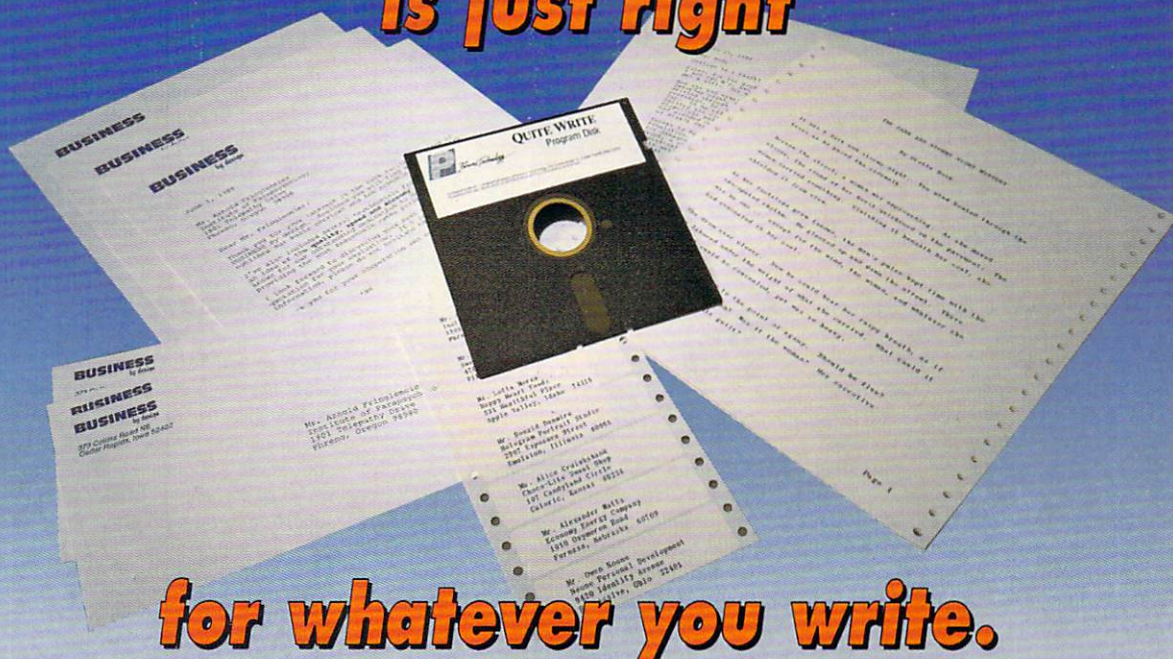
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How to Choose a Facsimile Machine

BY ROBERT CALEM

Look for the Right Combination of Features, Service, and Price

Using a facsimile machine may be elementary, but the task of buying one can be daunting. As a variety of competitively priced, feature-packed fax machines reach department stores and electronics chains, finding the best unit for your home business can be as difficult as buying your first computer.

Before you start to search local stores or scan the ads in the daily newspaper, determine what you need. You should know that there are three levels of sophistication for home-office facsimile machines: bare-



With a list price of just \$899, the Murata MF1200 is the lowest-priced facsimile machine available.

bones, midrange, and full-featured machines. In addition, there is a direct relationship between cost and operating speed. A more expensive machine generally requires less time to transmit a page than its lower-cost brother. Transmission rates usually range between 10 and 45 seconds per page. Be aware that your actual transmission will take longer than the optimal transmission speeds documented by manufacturers.

To figure out which category you should look at, ask yourself some basic questions: How often will the machine be used? What is the average number of pages per document? How many other fax machines will receive a single document that you send? Will you transmit graphic images? How important is portability? Once you've answered these questions, you're ready to begin shopping.

ROBERT CALEM, a freelance writer, was formerly executive editor of Home-Office Electronics. He wrote "What's New With Facsimile Machines?" last month.



The Toshiba 3300 (\$1,995) is a fast, user-friendly fax machine.

BARE-BONES FAX MACHINES

The most rudimentary models can function as copiers and contain 98-foot rolls of thermal paper. Some models integrate a telephone. (Portable fax machines are exceptions. They don't have an integrated telephone.) Only a few have multiple-page automatic document feeders, and a select few print in eight shades of gray. The suggested list-price range is \$899-\$1,500. However, you should be able to find a good quality basic fax machine at a local store for between \$700 and \$1,200. Frankly, beyond price tags, there are no major differences between most bare-bones fax machines.

MIDRANGE UNITS

Stepping up to the next level, you will see fax machines with such additional features as a liquid crystal display (LCD) panel (shows the current date and time, the call duration, and the telephone number dialed), and an automatic document feeders (some accept five-page stacks), one-touch dialing, polling, reporting, voice request, fine-mode features, and a gray scale of up to eight shades of gray. These additional features add about \$500 to \$750 to the cost of a basic fax machine, so



When hooked up to your computer, the \$2,695 Canon FaxPhone 25 doubles as an image scanner and puts graphics (including graphics that you receive via fax) right into your computer files.

evaluate their importance to you. If you regularly send multiple-page documents or need verbal confirmation, the premium is worthwhile. And for such people as architects, artists, and advertising executives who fax graphics or photographs, midrange models are essential.

FULL-FEATURED MACHINES

Starting at around \$2,000 and costing as much as \$3,000, the most sophisticated personal facsimile machines for small businesses hold 10 to 30 pages at a time in paper feeders, incorporate automatic page cutters, and accommodate 164-foot-long, 11-inch-wide paper rolls. In addition, some offer superfine mode, a gray scale of up to 16



Medbar Enterprises' PortaFax III (\$1,995) the first truly portable fax machine, allows you to send or receive a fax from anywhere, even from 35,000 feet in the air.

shades of gray, delayed and turnaround polling, and delayed transmission. At the high end of the range are fax machines that use plain paper and those with integrated RS-232C serial ports that enable the fax machine to connect to your computer and function as an image scanner.

PORTABILITY

You may also be interested in a portable fax machine like the PortaFax III (\$1,995) from Medbar Enterprises that is battery-operated and fits easily into an attaché case or travels in its own suitcase. It offers only basic functions—it will only transmit and receive, doesn't integrate with telephones, and doesn't offer polling, gray scale, or an automatic document feeder. Portable fax machines have not reached a level of sophistication comparable to that of laptop personal computers.

GOOD SERVICE AND THE RIGHT PRICE

In terms of price, facsimile machines have come a long way over the past two

years, and those targeted to home-office users are virtually maintenance free. Ideally, the only component you'll need to replace is the paper (about five dollars for a 98-foot thermal paper roll). Nevertheless, buy your machine from a reputable retailer who will provide after-sale service. Compare warranties. Remember, your business is on the line. And a final word of advice: Before you pay full list price, look around. Fax machines can be heavily discounted, and there are plenty of bargains to be had.

Fax Terminology

Automatic Document Feeder: A tray that feeds sheets of paper into the machine.

Automatic Paper Cutter: Cuts the paper from the roll once reception is complete.

Broadcasting: The ability to transmit the same document to several fax machines successively.

Delayed Transmission: A feature that lets you transmit automatically at any time.

Fine Mode: A feature that will make text clearer (resolution is 203-by-196 dots), but slows transmission rate.

Half Tones: The ability to distinguish among shades of gray (instead of just black and white) resulting in better contrast when transmitting photographs.

LCD: Abbreviation for Liquid Crystal Display, a type of alphanumeric display similar to those used on digital watches.

Polling: A feature that allows the receiving fax machine to initiate document transmission remotely. Delayed polling allows the fax machine to poll at a preset time—at night when rates are lower, for example. Turnaround polling is a fax machine's ability to initiate both transmission and reception in one phone call.

RS-232C Serial Ports: A connection that allows a computer and a fax machine to exchange data.

Transmission Rate: The length of time it takes for information to go from point A to point B.

Reporting: A feature that allows the fax machine, following transmission, to print out a piece of paper that identifies the phone number of the fax machine that received and/or sent the transmission, the length of the transmission, and whether or not errors occurred.

Voice Request: A feature that allows you to switch to a conversation with a party at the other end once transmission is complete. ■



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CIRCLE READER SERVICE 17

Tips on Selling, By Mail and By Phone

BY SARAH & PAUL EDWARDS



For most of us, a happy, loving home is our most important personal goal.

According to a recent State of the American Home survey, conducted by Market Facts for Johnson Wax, 85 percent of Americans share this ambition.

Spending more time as a family—one of our favorite leisure activities—is a major reason for the dramatic increase in the number of home offices. Working from home means more opportunity to deepen and enjoy family relationships. That's what brought us home in 1974.

Over the years, we've found several ways to make working from home more enjoyable for everyone in the family:

- Separate your office from the rest of the house, even if you can do no more than divide the area with a screen, drape, bookcase, or room divider.
- Establish a signal for letting family members know when you don't want to be interrupted. For example, keep the office door closed and post a "Do Not Disturb" sign or a plastic clock with hands set to indicate when you'll be available.
- Let family members know what constitutes an emergency for which you *do* want to be interrupted, such as when someone's been injured, a customer is at the door, or a water pipe breaks.
- Install a separate business telephone line so your family can make personal calls without tying up the line for your incoming business calls.
- Locate your office away from high noise areas (if possible), such as the children's play area and the family room.

Crib Sheets For Difficult Moments in Selling. Virtually everything worthwhile in life requires some degree of selling. Yet many of us dread the act of selling. Instead, we hope that people will just notice how good our products or ideas are and come to us. We

put off calling prospective clients and customers. We postpone asking for the sale or a price increase.

Why? Usually because we fear failure or rejection—that awful sound, "no." Now there's a manual that takes some of the anxiety and ordeal out of selling. It's called *The Sales Script Book*, by Donald J. Moine and Gerhard Gschwandtner.

The Sales Script Book tells you specifically what to say to get past almost every conceivable no—"I'm too busy to talk," "I'm not interested," "I have to think it over," "I can't afford it," and 26 more rejections.

Each objection is tabbed by number. You turn to the proper number to find 10 to 20

Virtually everything worthwhile in life requires some degree of selling.

responses for turning that "no" into a "yes." Here are portions from 2 of 21 possible responses scripted for the objection, "I am too busy to talk with you":

• "Are you too busy to make more money?"

• "Just as you believe in the value of your time, I believe in the value of our product. I also believe we can save your company a lot of money . . ."

We've been using this manual recently to prepare ourselves for an in-person sales call. For phone sales, we have it in front of us and turn to the script to overcome whatever objection we hear. This valuable manual is available from Personal Selling Power, P.O. Box 5467, Fredericksburg, VA 22405, (800) 752-7355. It costs \$99, but if you make a few sales from it, it more than pays for itself.

How to Write Letters That Sell. Often making a sale depends on your correspondence. In the book *The Greatest Direct Mail Sales Letters of All Time*, Richard Hodgson points out that direct mail is actually a personal medium and suggests that the most successful business letters have a genuine person-

to-person feel and tone.

He then lays out the basics for creating a winning direct-mail campaign and offers samples of classic sales letters for promotions, mail-order offers, fund-raising requests, follow-ups, closes, inquiries, and lead-getting.

The Greatest Direct Mail Sales Letters of All Time (\$91.50) can be ordered from Dartnell Corporation, 4660 Ravenswood Ave., Chicago, IL 60640; (800) 621-5463.

Make Time by Working with Purpose. Do you wake up in the morning and begin mentally planning the events of your day, looking forward to getting a lot accomplished? Doesn't that feel good? But how often do you find that before you know it, the day is over, you never got around to the things you'd planned to do, and you're wondering, "Where did the time go?"

What happened? Somehow you got sidetracked. The solution we've found to this problem is to work with purpose. Without purpose, we have nothing to aim for. And when you aim at nothing, you hit it every time.

What are you working for? To find your purpose in life and keep your days on track, follow the advice of the headmaster in the Academy Award-winning movie, *Chariots of Fire*: "Examine yourself, discover where your true chance of greatness lies. Seize that chance and let no power or persuasion deter you from your task."

Once you've identified your purpose, write it down on five or more index cards. Post these mini purpose-posters on your dressing mirror, telephone, computer, car, or file cabinet. Sarah's current purpose is to bring our "Wake Up to Success" radio show everywhere in the country every day of the week. And we have reminders of this throughout our home and in our cars.

Turn Fatigue Into High Energy. *High Energy: How to Overcome Fatigue and Maintain Your Peak Vitality* is a book written for everyone who feels tired and is full of tips on bringing yourself back to life. This Jeremy P. Tarcher publication (1986) costs \$14.95.

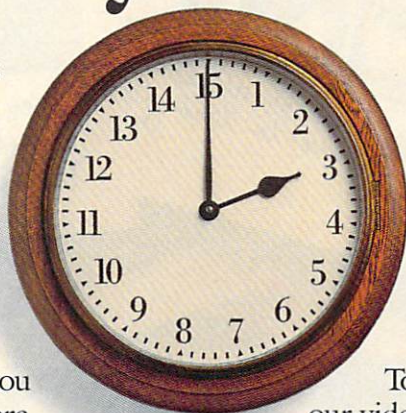
Quote of the Month. "You've got to be very careful if you don't know where you are going, because you might not get there." —YOGI BERRA

PAUL & SARAH EDWARDS are members of HOME-OFFICE COMPUTING's advisory board. They are authors of *Working From Home*, operators of *CompuServe's Working From Home Forum*, and hosts of the Los Angeles-area radio show "Wake Up to Success."

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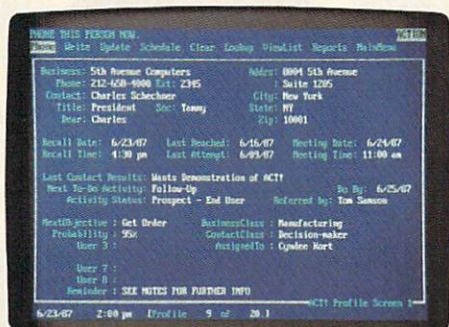
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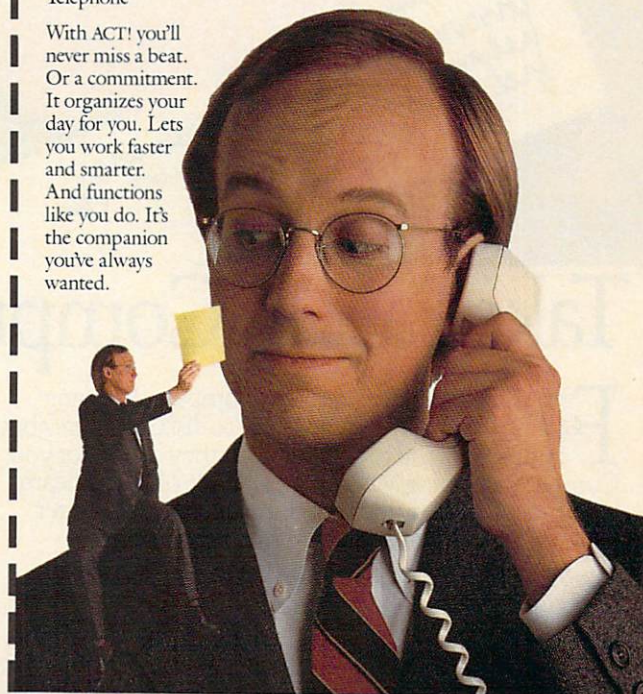


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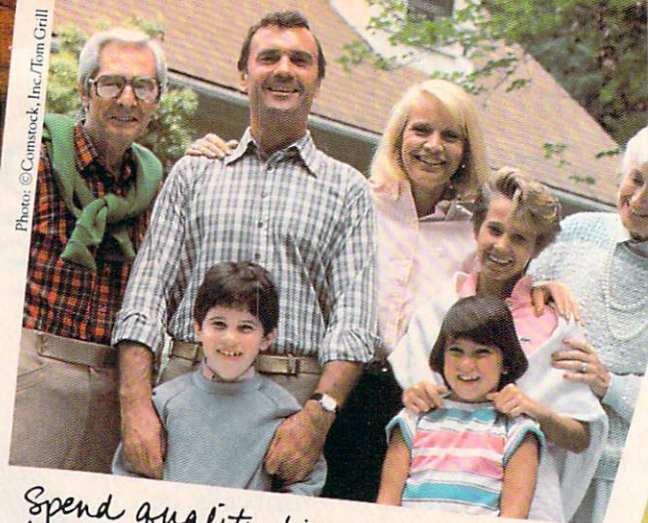
CIRCLE READER SERVICE 22

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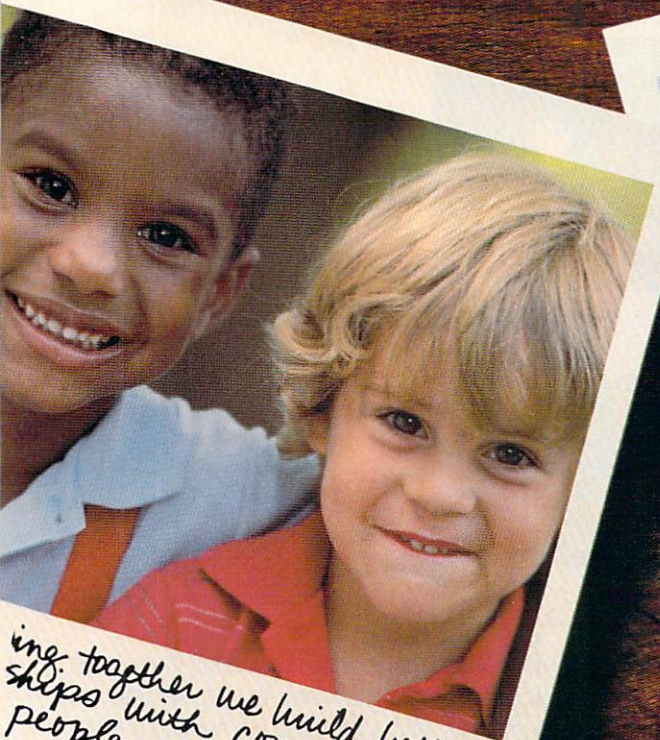
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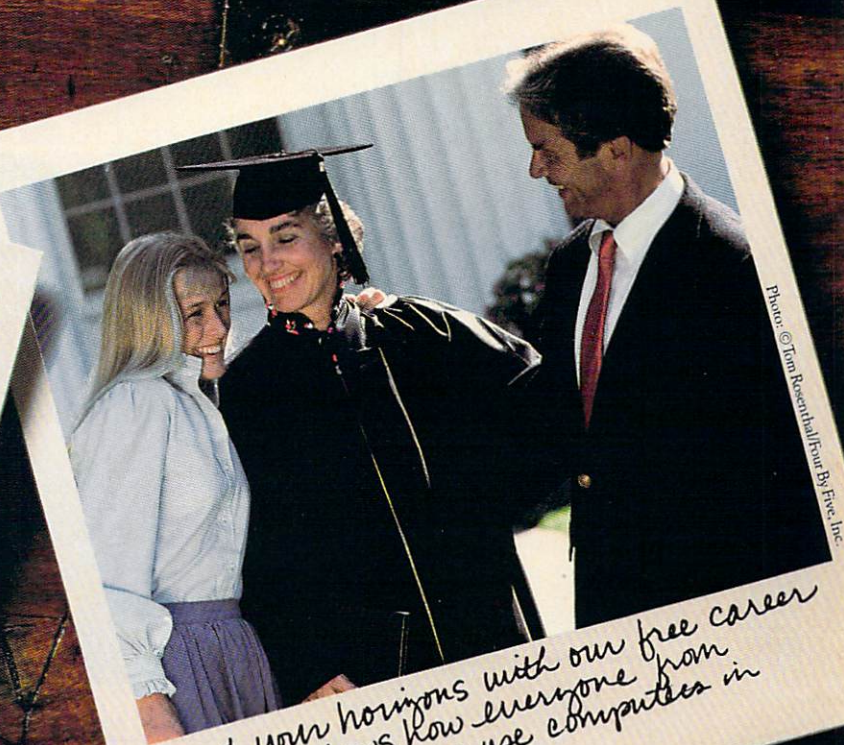
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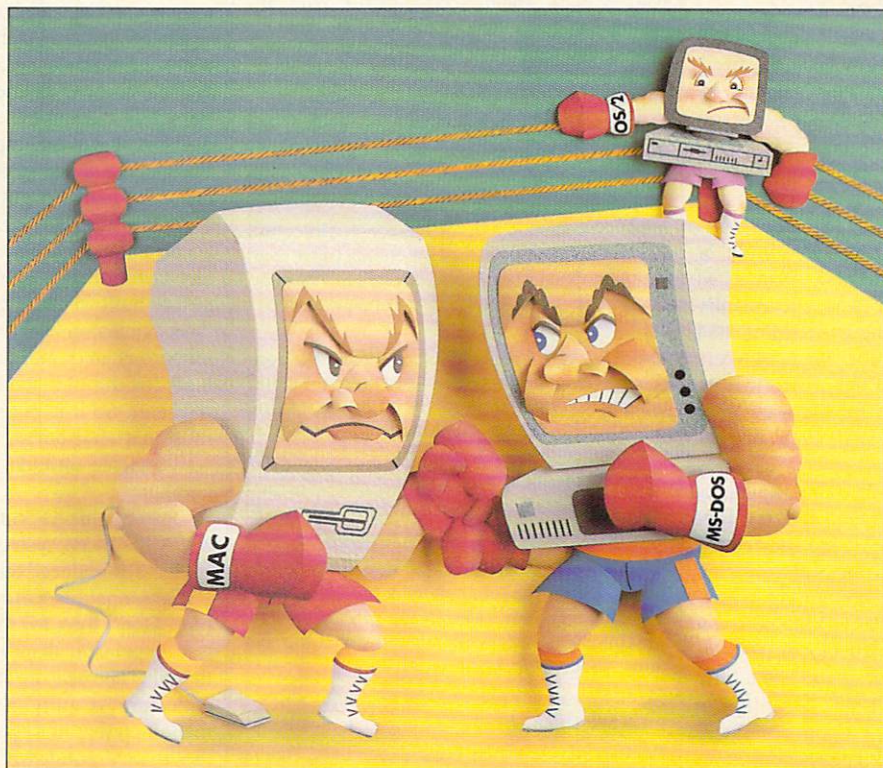


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Macintosh VS. MS-DOS VS. OS/2

*Compare
the Virtues
and "Vices"
of the Three
Systems to
Figure Out
Which
One Is Best
for You*



*Plus:
Answers
to 20
Questions
That Every
Computer
Shopper
Should
Ask*

BY STEVE MORGENSTERN

Most really interesting rivalries build up over the course of generations. Republican and Democratic candidates first locked horns 132 years ago in the 1856 presidential campaign. Yale and Harvard football players marched onto the field 113 years ago this November. These are rivalries that have deepened through decades of conflict.

In the world of high technology, though,

speed is the key, and rivalries spring up, mature, and become entrenched with astonishing rapidity. It was less than five years ago that Apple threw down the gauntlet and took on IBM with the Macintosh computer.

Since that time, both sides in this intense rivalry have shifted positions drastically. The past year has been particularly active.

The Macintosh finally achieved corporate respectability. The closed box of the original Mac—monochrome, slotless, and software-poor—has been transformed into an expandable, color-capable system, with a range of powerful programs.

Meanwhile, the IBM "standard"—the single thread that has run consistently throughout the hardware and software developments for most of the decade—abruptly split into two incompatible camps. At the same time, the concept of a Macintosh-like, graphics-oriented, mouse-based, point-and-click user interface has taken root in the IBM world, with promises of more to come.

At this stage, the situation seems to have temporarily stabilized. Although we are still waiting for some of the promised components of the new operating systems to appear, the outlines for current decision making are

STEVE MORGENSTERN is a contributing editor for HOME-OFFICE COMPUTING. He has both an MS-DOS and a Macintosh computer.

relatively clear. Now is a good time to assess the factors involved in deciding among incompatible computing standards and in making your buying decisions. We'll also explore the new levels of compatibility that have recently been achieved—and what they mean for your computing.

THE BRAVE NEW WORLD OF IBM COMPUTING

When IBM introduced its Personal Computer (PC) in 1981, the company never expected desktop computing to grow the way it did. The core business of Big Blue has been big machines—minicomputers and mainframes—sold to companies with experts and departments dedicated to managing computer installations. The IBM PC was an accommodation to the companies buying those high-powered machines who wanted to distribute some of their computing tasks to individual users and to buy all their computers from a single source.

As a result, the IBM PC was designed using primarily off-the-shelf parts, with components available to any manufacturer. The operating system was not designed by IBM either, but farmed out to Microsoft, and Microsoft was free to sell versions of this operating system to anyone who wanted them. There was really only one factor that was distinctly IBM—the BIOS (see "Glossary: Terms to Know" for a definition of BIOS and other technical terms). As the IBM PC took off, the BIOS was successfully cloned by clever entrepreneurs. IBM created a market, and dozens of other manufacturers began building computers that conformed to IBM's standards, ran the same software, sold for much lower prices, and even outperformed IBM hardware.

It was a classic Catch-22. The popularity of low-cost clones encouraged the development of a wealth of software and spurred the growth of IBM-compatible (also called "MS-DOS-compatible") computing. However, IBM saw its own share of the personal computer marketplace shrink drastically from more than 75 percent in 1983 to a little more than 25 percent in 1987, according to most reports.

The IBM answer? Establish a second standard—protected by enough patents and proprietary developments to discourage competitors and powerful enough to allow for future growth. A new series of computers was unleashed to the computing world, and with it two key acronyms: PS/2 and OS/2. And despite the apparent alphanumeric similarity, the two don't necessarily go hand in hand.

IBM'S PS/2 SERIES: A RANGE OF POWER

Personal System/2 (PS/2 for short) is the current line of IBM personal computer hardware. It spans three progressively more powerful CPUs—the Intel 8086 (basically the same microprocessor used in the IBM PC) for the Models 25 and 30, the 80286 (used previously in the PC AT) for the Models 50 Z

TERMS TO KNOW

BIOS: Stands for Basic Input/Output System. A set of instructions (usually residing on a ROM chip in the system unit) that controls the different hardware components of the computer.

CGA: The original color graphics standard for IBM and compatible computers providing a 320-by-200-pixel resolution with four colors on-screen simultaneously. (See EGA, VGA.)

Code: Computer language instructions to the computer. For example, a ROM chip contains code. (See operating system.)

CPU: Stands for Central Processing Unit. The heart of the computer, the CPU is the microprocessor (often called a chip) that controls the execution of program instructions. The CPU in an IBM PC AT or compatible is an Intel 80286 microprocessor; an IBM PS/2 Model 80 uses an Intel 80386. The Macintosh Plus and SE use the Motorola 68000 microprocessor as the CPU, while the Mac II is powered by a Motorola 68020 chip.

EGA: A color graphics standard for IBM and compatible computers providing a maximum 640-by-350-pixel resolution with 16 colors on-screen simultaneously. The next step up from CGA. (See CGA, VGA.)

EMS: Stands for Expanded Memory Specification. A system in PC-compatible computers for expanding available memory beyond the 640K limit imposed by MS-DOS.

MCA: Stands for MicroChannel Architecture. An IBM-patented system for connecting expansion boards and peripheral devices to a computer system; used on PS/2 computers, Models 50 Z and higher.

Multitasking: A technique that allows the computer to execute more than one program simultaneously. OS/2 supports multitasking, as does the MultiFinder on the Macintosh. However, the applications software must also support multitasking for it to work.

Network: The hardware and software system used to connect two or more computers.

Operating System: A collection of programs that controls the fundamental operations of a computer system. MS-DOS, OS/2, and the Macintosh's System file are all operating systems. (See Code.)

Pixel: One dot or point on the computer's monitor. (See CGA, EGA, VGA.)

PostScript: A printer control language created by Adobe Systems that allows users of laser printers and/or professional typesetting equipment to adjust the size of text or graphics and then print them at the maximum resolution of the output device.

ROM: Stands for Read-Only Memory. A chip that contains permanently stored instructions for the computer. (See Code.)

User Interface: The combination of on-screen display and information entry procedures that determines how the user interacts with a computer program.

VGA: The latest color graphics standard for IBM and compatible computers that provides a maximum 640-by-480-pixel resolution with 16 colors on-screen simultaneously or 320-by-200 pixels with 256 colors on-screen simultaneously. The next step up from EGA. (See CGA, EGA.)

and 60, and the Intel 80386 for the Models 70 and 80.

The key factors that distinguish the PS/2 line from the PCs that came before are the VGA graphics standard, 1.44MB 3.5-inch disk drives, and MicroChannel Architecture (MCA). Actually, the two low-end members of the PS/2 family, the Models 25 and 30, provide only a subset of the VGA graphics standard, have only 720K drives, and don't include MCA. They are PS/2 computers in name only, retaining most features of the older PC line. The growth path for IBM is in the PS/2 Models 50 Z, 60, 70, and 80.

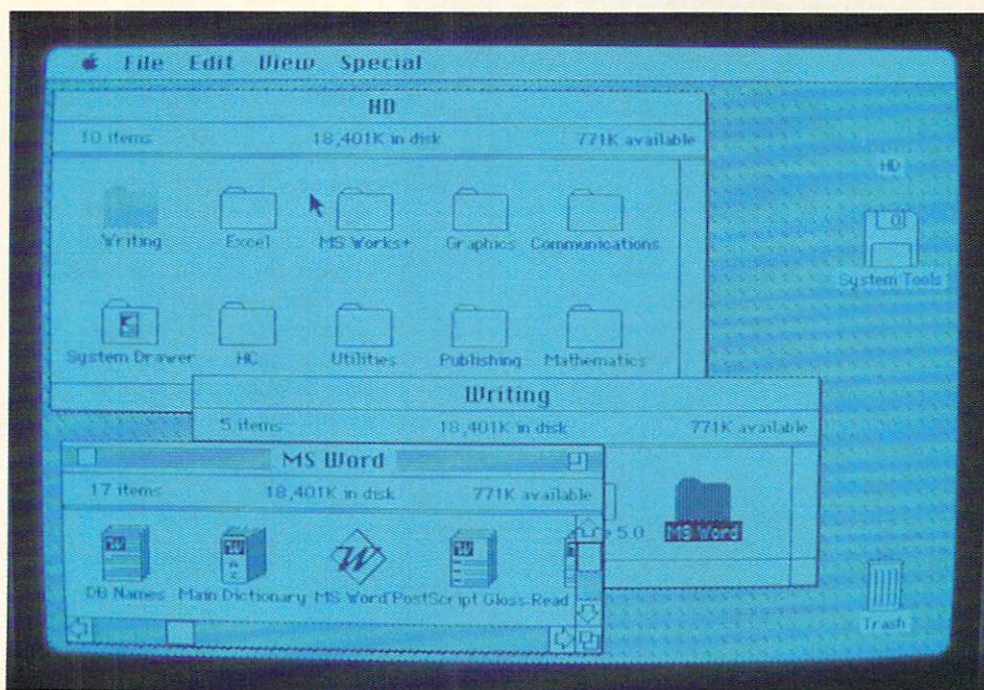
The VGA graphics standard, a significant step beyond EGA, is built into the PS/2 Model 50 Z and higher computers, but it's also available through add-on cards for traditional IBM compatibles. MicroChannel Architecture, on the other hand, is a permanent feature of the computer system board for the machines that have it. Either you buy a computer with MCA or you don't—it's not an option you can add later.

MicroChannel Architecture is a new system for connecting expansion cards, such as additional memory and internal modems, to a personal computer. According to IBM, MCA will provide improvements in computing speed and connectivity in the future. The difficulty is that, right now, we haven't seen these promised advantages in action. The PS/2 computers released to date don't perform any faster or with more flexibility than computers built to the established PC standard. And expansion boards for MCA are far less numerous and more expensive than those built for the old standard, with no apparent payback. So it is not surprising that, for the most part, corporate America has taken a wait-and-see attitude toward adopting PS/2 computers.

Despite this lackluster reception for the MCA hardware system, several manufacturers have announced their intention to produce PS/2-compatible computers in the near future. Don't look for these to be substantially less expensive than IBM's own PS/2 line, though. The reason: The MicroChannel Architecture is fully patented by IBM, and manufacturers must pay substantial licensing fees to incorporate MCA into their machines.

OS/2: THE OPERATING SYSTEM OF THE FUTURE?

Operating System/2 (universally referred to as OS/2) is system software, not hardware. It is intended as an eventual replacement for DOS. And the only relationship between PS/2 and OS/2 is typographic. You don't need a PS/2 computer to run OS/2—in fact, the PS/2 Models 25 and 30 won't run OS/2 at all, although any PS/2 computer will run MS-DOS. What you do need is a computer based on the Intel 80286 or 80386 microprocessor; that is, the PC AT class or above. You also need lots of memory. OS/2 requires at least 1.5MB of RAM, and for a practical configuration, you need even more.



Macintosh

You control the Macintosh interface primarily through graphic symbols. For example, the "MS Word" window contains icons for the Microsoft Word program, its spell-checking dictionary, and a couple of files. On the right and bottom of the window are visual scroll bars for quickly moving from place to place within that window. A third graphic element is the cursor that you control with a mouse; the pointing cursor is found in the "HD" window between "Excel" and "MS Works+" folder icons.

What you'll apparently receive for your expenditure is an operating system that supports megabytes more memory than MS-DOS's current 640K limitation. It will also allow you to be more productive by running two or more programs simultaneously, a process called multitasking.

OS/2 is a joint project of IBM and Microsoft. Currently Compaq, Tandy, Dell, and a few other vendors are shipping versions of the OS/2 system that are virtually identical to the IBM OS/2 release, but customized for their own machines. However, the varieties of OS/2 will soon develop more substantial differences. The more interesting version of OS/2 incorporates a graphic interface called the Presentation Manager. Presentation Manager is reportedly similar to Microsoft Windows, the graphics-based operating environment that is currently available running under MS-DOS. It incorporates many features commonly associated with Macintosh computing as well, including:

- Multiple windows that are individually framed screen areas—several of which may appear on-screen simultaneously, each containing a separate view of a document—or even separate application programs.
- Mouse control of an on-screen cursor.
- Point-and-click selection procedures using on-screen menus and graphic symbols called icons.

IBM is scheduled to ship its own version of OS/2 with Presentation Manager this month. Other manufacturers are expected to ship their own variations of OS/2 with Presentation Manager by year's end. It seems that IBM's version of Presentation Manager will include a number of distinctive features that will differentiate it from the generic

version that other vendors will license from Microsoft. Until the boxes arrive, however, it is difficult to say precisely what these features will be. Even then, the first version shipped will undoubtedly be significantly enhanced in subsequent releases.

APPLE'S MACINTOSH: MORE THAN EASE OF USE

In the Macintosh world, the developmental situation outlined earlier for IBM's machines was reversed. From the beginning, the system boasted impressive ease of use. Part of the reason is rooted in the hardware. The Macintosh is built for mouse-based operation (a mouse is shipped with every computer), and the operating system code to control the mouse, along with graphics routines and other system software, are built into a ROM chip. This means that every program can easily use the Mac's ROM-based routines for such tasks as printing out documents. If you know how to cut and paste or open and save a file in one Mac application, you know how to do it in nearly every other application.

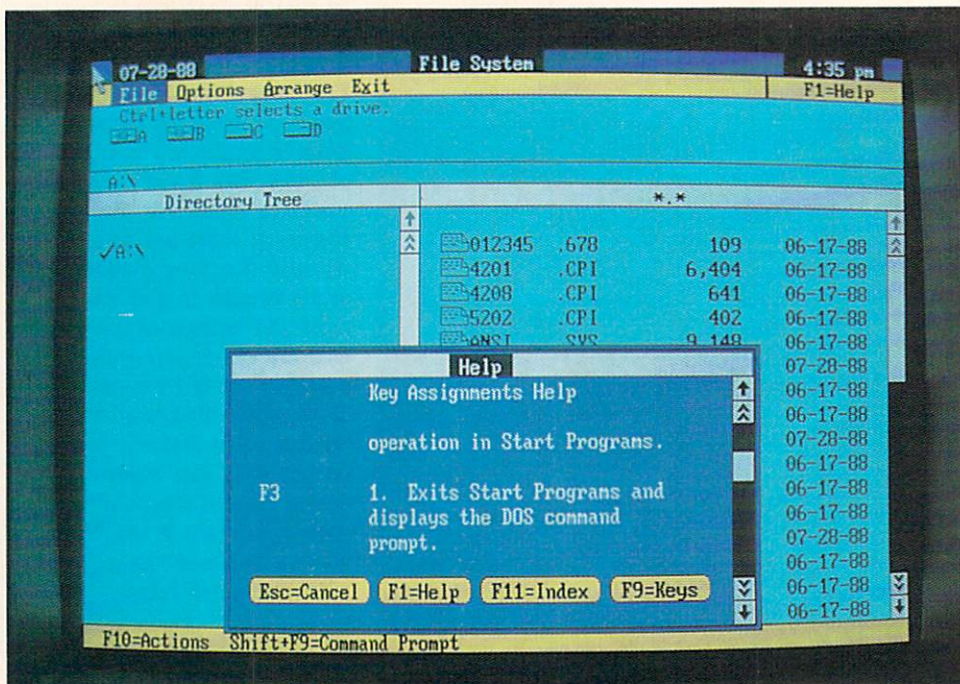
Yet the original Macintosh vision also faltered on the hardware side. The first Macs—with a single built-in 400K disk drive, 128K of internal memory, a keyboard without cursor or function keys, and no standard internal hard-disk option—were far too limited to accomplish practical business tasks. Today's Macintosh models have solved these problems. The monochrome Macintosh SE still has the familiar boxy Mac look with its built-in 9-inch screen, but it offers significant improvements over its ancestors. It comes with an 800K disk drive, with room inside the case for either an additional floppy or an internal hard disk. System speed has also been improved, and there's a choice of two greatly improved keyboards.

The SE also has a single internal slot to accommodate expansion cards. Using the expansion slot is still inconvenient compared to the relative ease of removing a few screws and popping an expansion board into an IBM compatible. Opening the Mac case requires a special tool and is a chore best left to a dealer. Nevertheless, the expansion capability is built in.

For those with deeper pockets, the Macintosh II is a powerhouse computer with a fast Motorola 68020 microprocessor, six expansion slots, and color capabilities that begin with a 16-color display (similar to VGA) but can easily and inexpensively be expanded to 256 colors out of a 16.7-million-color palette and even beyond that with special graphic adapters. Of course, there is a price for this much power—a basic Macintosh II configuration starts at about \$5,000, and fully outfitted systems can cost thousands more.

The Macintosh has seen changes in its operating system in the past year as well, with the introduction of MultiFinder—but this is neither as controversial nor as significant a change as the arrival of OS/2.

MultiFinder allows Mac users to keep several different programs in memory at once—Apple's first step toward true multitasking. The latest releases of most software packages are compatible with MultiFinder. And MultiFinder is an optional variation on the standard Macintosh operating system—if a program will not run properly under MultiFinder, it is a simple matter to switch over to the standard Finder and use it. Even though MultiFinder certainly works best with more than the standard 1MB of system memory, memory expansion is not required to use it if your programs aren't too big. And the price is right—it's included with the purchase of every Macintosh computer.



MS-DOS

Version 4.0, the latest incarnation of PC-DOS and MS-DOS, includes several improvements over the previous version. One of the most helpful is the built-in "DOS shell" that gives you menu choices for working with any file. While you can still use the keyboard, this version also supports a mouse for DOS functions; the mouse cursor is in the upper-left corner of the screen. In addition, DOS 4.0 offers on-line help that pops up in windows as needed.

20 QUESTIONS THAT WILL HELP YOU MAKE THE RIGHT CHOICE

The choice between purchasing an MS-DOS compatible or a Macintosh computer has never been more difficult, as each system adopts the most significant advantages of the other. The basic computing tasks—word processing, spreadsheet calculations, and database manipulation—can be accomplished with a high degree of success on either system. Still, although the distinctions may be more subtle than they once were, there are significant differences to consider, based on your computing preferences and the tasks you plan to undertake. And even if you've already decided to buy an MS-DOS computer, you'll need to choose between one that will run solely MS-DOS or a more powerful machine that will accommodate OS/2. The ideal would be to have one of each, but for most of us that's like ordering two cars at a time. Assuming that you have an either-or choice to make, let's play 20 questions. Here's what I would ask before wandering through any dealer's showroom.

Q: How easy is each computer system to use?

Perhaps the strongest reason the Macs have made inroads into American business is the fact that they're undeniably easier to use than MS-DOS machines. There are several elements contributing to this superiority. The visual interface, in which users see graphic choices on screen—such as icons and buttons—and pick the one they want by pointing to it, is part of the formula. The most significant Mac advantage in this regard, though, is consistency in operation, as described earlier. Since a Mac user has such a headstart learning additional applications, training time is cut to the bone. This factor becomes even more important if there will be several

computer users in your business, each of whom must devote time to learning how to use the machine.

The IBM world is moving in the direction of a visual interface with OS/2's Presentation Manager, and currently Microsoft *Windows* gives you a graphic software environment running under MS-DOS that insulates you from that operating system's inconsistencies (if you have the right software that works with *Windows*). Still, there is a long way to go before the bulk of MS-DOS or OS/2 programs offer the graphic interface and software consistency of the Macintosh world.

Q: I'm already comfortable with one type of computer system. Shouldn't I buy the same type?

If you already work with one type of computer, you will naturally be inclined to buy the same type for your second system. You gain in two ways: No retraining is required, and you won't have compatibility problems moving work back and forth between computers.

However, if you are strongly drawn to the other camp in choosing your next computer, keep in mind that moving information from one system to the other has become much easier in recent months, and that trend will certainly continue. Several key programs—such as Microsoft *Word* and *Excel*, Aldus *PageMaker*, and *WordPerfect*—are now available on both Macintosh and MS-DOS systems, and each will read files created on the other. In addition, many Macintosh programs will now automatically translate files created using core MS-DOS programs, such as Lotus *1-2-3* and *dBase*, into their own format and export them back again for MS-

DOS machines.

Several hardware/software solutions for sending files back and forth between Macs and IBM compatibles are now available. For instance, the DaynaFile disk drive for the Macintosh will read an MS-DOS disk (either 5.25- or 3.5-inch) and write files to that same disk. *Laplink Mac* is a cable and software combination that simplifies transferring files between machines. And MS-DOS compatibility cards are available for Mac expansion slots, enabling users to run their IBM software on a Mac.

Q: How hard is it to set up the computer and install software?

In terms of physical set-up of the system hardware, the difference in initial installation should not be a significant factor in making your selection. For instance, a Macintosh SE, with its built-in screen, is marginally easier to set up, but most people don't have trouble connecting the monitor cable to the video interface on a PC, PS/2, or Mac II.

Setting up the system software is another challenge. For instance, to organize a hard-disk drive by application and data files, the Mac's operating system gives you a simple menu command for making what it calls *folders* to hold each group of files. Without the help of a good utility, MS-DOS offers a command line, the *C:*, where you type memorized commands that create what it calls *directories* to hold file groups. Not as easy. That's why OS/2 with the Presentation Manager and MS-DOS 4.0 offer their own simplified menu commands for this basic system setup chore.

Installing applications software on a PC or PS/2 computer, however, is only slightly

Program Selector

To select a program, press \leftarrow , \rightarrow , \uparrow , or \downarrow . Then, press Enter.
To select Update, press F10.

Start a Program

- DATA BASE
- OS/2 Command Prompt
- SPREADSHEET
- WORD PROCESSING

Help - Start a Program

More: \downarrow

From Start a Program, you can:
Start a program
Access the Command Prompt

To start a program:

Use the arrow keys to highlight the title of the program you want to start and press the Enter key.

NOTE:

To start a DOS program, select

Esc=Cancel F1=Help F5=Index F9=Keys

more complicated than the same task on a Mac, simply because MS-DOS and OS/2 programs must support more variables when it comes to different graphics standards and printers. But most software publishers have made this process fairly painless.

Q: How easy will it be to expand and upgrade my system?

It is a relatively simple matter to open the system unit of an IBM compatible—either PC or PS/2—and install a memory board, internal modem, enhanced graphics board, or other device from an abundant world of add-ons. The number of choices for Micro-Channel Architecture expansion boards is still limited, though, and the prices are consistently higher than boards that perform the same functions for PC compatibles.

The Macintosh II is also easy for the user to expand with add-on boards, but the Macintosh SE is more difficult. The SE has only a single expansion slot, and the system unit is designed to be opened only by qualified service personnel, not by the user. While tools are available to "crack" the SE case, this voids the manufacturer's warranty. There aren't nearly as many boards for either Mac as for PC-compatibles, but several are available for such purposes as memory expansion, attaching a large external monitor for desktop publishing, and speeding up the microprocessor's operations.

Q: What will OS/2 do for me that MS-DOS won't?

Technically, there are three basic advantages. MS-DOS was originally designed to use only 640K of memory at a time. To overcome this limitation, several major hardware and software manufacturers agreed to the Expanded Memory Specification, a standardized memory management technique

that allows programs to use up to 32MB of memory to store data. However, the size of the program itself is still limited. OS/2 overcomes this obstacle, since applications can use up to 16MB.

The second significant function of OS/2 is its ability to use the multitasking capabilities of the 80286 and 80386 microprocessors. Multitasking has several potential uses. The most readily apparent is the ability to conduct more than one operation at a time. For instance, you could be writing with a word processor, while, in the background, the computer handles a task such as communicating with a modem, printing a document, recalculating a sizable spreadsheet, or sorting a large database.

The unknown quantity in this equation is the third advantage, the Presentation Manager. Proponents of OS/2 hope that this new graphics interface represents an opportunity to bring Macintosh-like consistent operation and ease of use to PC software. This is currently a sore point among users of IBM and compatible systems. Even an operation as simple as printing a file is accomplished in different ways in virtually every MS-DOS program, and the same is true for every other operation. This means lots of inconvenience and long, expensive hours of training. So OS/2 is potentially a big time-saver.

Q: Sounds great! That means I should get OS/2 instead of MS-DOS, right?

Maybe. The future popularity of OS/2 is currently unclear. It is fairly expensive in and of itself—\$325 for its current version and more for the Presentation Manager release. More important, it requires more powerful computer hardware than MS-DOS requires, either an 80286- or 80386-based computer and a whopping increase in system memory. That last extra expense is particularly note-

worthy since the price of computer memory has skyrocketed this year.

More significant is the fact that OS/2 is merely an operating system; it requires newly written software to make use of its potential—such as multitasking—and that software has not yet arrived in any real quantity. A few OS/2-based programs have been released, but they are merely existing MS-DOS programs rewritten to work under OS/2, with no consequential additional functionality. Certainly nothing to justify the switch now to OS/2.

So . . . OS/2 is expensive now, yet may prove worthwhile in the future. The logical conclusion is to keep your options open when shopping for an IBM-compatible system. That means at least an AT compatible and enough memory expansion capability either on the system board or through expansion slots to support the requirements of OS/2, if and when it becomes a practical tool.

Q: When it comes to the Big Three applications—word processor, spreadsheet, and database—which system is the best?

There are excellent basic applications programs available for both the Macintosh and MS-DOS systems, but not much running under OS/2. Granted, there is more variety in MS-DOS software, but the number of choices for high-end Mac word processors has recently broadened, and there are several interesting new spreadsheet programs in the works.

One area about which we hear some grumbling from Mac owners is relational database software. It's not that *4th Dimension* and *Omnis*—two leading Macintosh products in this category—aren't powerful enough, but they run more slowly than equivalent MS-DOS software.

What about OS/2 software? At this writing

the pickings are exceedingly slim. Two rays of sunshine were the recent announcements of *Paradox* and *Q&A* for OS/2. *Paradox* is a powerful and elegant relational database, while *Q&A* (an integrated database and word processor) is a winner on MS-DOS systems. Both promise to add some additional functionality under OS/2. By and large, though, the availability of OS/2 software is a wait-and-see proposition at this point. And while there is an MS-DOS compatibility option included with OS/2, there have been many reports of problems with this solution.

Q: Which machine supports more industry-specific software?

You'll find excellent examples of all the software basics for both Mac and IBM-compatible systems. If you are looking for software specifically tailored to a particular business or industry (often called *vertical market* software), though, you are more likely to find it in the MS-DOS world. We're talking about programs that come out of the box designed for running a doctor's office or eliminating duplicate names in a direct-mail list—software custom-tailored to the narrow needs of a specific business or profession.

The overwhelming acceptance of IBM-compatible computing in American business over the course of years and the standardization on a few key programs have created a rich resource of highly specialized software. For example, literally hundreds of sophisticated Lotus 1-2-3 templates have been created to automate specific scientific and financial tasks, while specialized business databases in *dBase* format are plentiful. The same cannot be said about the Macintosh marketplace, although the system's rapid rise in the corporate community holds promise. For example, there are plenty of templates available for the Microsoft *Excel* spreadsheet and developers have created stand-alone databases with *Helix* and *4th Dimension*.

The point really isn't the quantity of specialized software available for each system, but whether the specific application you particularly need has been addressed. To find out if it has, consult the specialized magazines and newspapers that serve your business or profession, talk to colleagues, or contact any trade association that exists in your specialty.

Q: Is computing better with a mouse?

For the most part, computing with a mouse has received high marks. Although both Mac and IBM-compatible systems will support mouse operations, most MS-DOS software is not designed for mouse control. Almost all Macintosh programs rely on the mouse for selecting operations and moving through files or applications.

Of course, this means that you must use a mouse if you use a Mac, although practically all programs offer keyboard shortcuts for many commands. For instance, Microsoft *Word* on the Mac can be used in its entirety

Co-workers and clients develop an impression of you based on the computer you "drive."

without a mouse, but that's an exception. Some users just don't like taking their hands off the keyboard to reach for the computer rodent. Others can't find the multiple square inches required for mouse operation on their cluttered desktop. Whatever the reason, mousing is a matter of personal preference. If you choose Mac computing, it is a necessity. If you choose MS-DOS, it is a limited-availability option.

Microsoft *Windows* and the *GEM* system from Digital Research bring Mac-like mouse-based interfaces to MS-DOS users, but most IBM-compatible software is not written to support a mouse. The forthcoming version of OS/2 with Presentation Manager promises to bring a new wave of mouse-based software to high-end IBM PS/2 users, but it will be well into 1989 before we can judge the breadth of selection or quality of these applications.

Q: Which computer system has the best printers?

If you need a dot-matrix printer, the Macintosh is designed to work with the Apple ImageWriter printers. The ImageWriters are capable performers—particularly the LQ model—but represent a limited selection when compared to the breadth of dot-matrix printers available for IBM compatibles. They're also comparatively expensive. There are several ways to connect non-ImageWriter printers to a Mac, but results vary widely. The tricky part is the resolution: The Macintosh expects 72 dots per inch, while most MS-DOS-oriented printers provide 90 dots per inch. The translation from one to the other can be accomplished through special software or a hardware device from Orange Micro called Grappler LQ (for parallel laser and 24-pin printers) or Grappler C/Mac/GS (for 9-pin printers). In either case, it is advisable to try it before you buy a non-Apple printer for your Macintosh system.

On the laser-printer side, the situation is less restrictive. Both Macs and IBM compatibles can be used to drive high-end (\$4,000 and up) PostScript-equipped laser printers. Until recently, laser printers with more limited capabilities (no PostScript) and lower price tags (around \$2,000) were available for IBM systems and not for Macs, but that has changed with the introduction of so-

called "personal" laser printers from General Computer (the PLP) and Apple (the IISC). Still, software support for these lower-cost Mac laser printers is not nearly so extensive as the support for the Hewlett-Packard LaserJet and compatibles in the MS-DOS world, particularly when it comes to desktop publishing output and the variety of available typefaces.

Q: Which computer system is better for graphics-intensive projects?

The Macintosh was born and bred for graphics. The increasing acceptance of higher-resolution graphics standards (EGA and VGA) and mouse-based computing in IBM compatibles are helping to make graphics creation more practical on these machines, but there is a substantial lag in the availability of high-end software tools.

Both systems boast excellent desktop publishing and presentation programs. But the IBM compatibles fall behind in drawing, painting, and PostScript graphics creation software, and these are the basic tools of computer-based graphic arts.

The Macintosh II's on-screen color capabilities are superb. Many professional graphic artists interested in computer graphics are making the Mac II their machine of choice. A color Mac II installation represents a \$7,000 investment, though. If you can make do with a somewhat lower level of color capability, you can find an attractive middle ground with an AT compatible equipped with VGA graphics for thousands of dollars less than a color Mac II. There is simply no practical middle ground when it comes to color display in the Mac world—yet. There are add-on boards that produce color on a Mac SE, but they are not fully compatible with Mac II color, and, therefore, have limited software support. There are rumors of a mid-level color machine from Apple in the not-too-distant future, but no actual announcement has been made to date.

Q: How much should I expect to spend?

Macintosh computers are significantly more expensive than comparably powerful IBM-compatible systems. Dozens of MS-DOS systems are available from manufacturers who must compete fiercely based on features and price. If you want a Macintosh, on the other hand, you buy from Apple. Period.

The street price of a Macintosh SE with a 20MB hard-disk drive is nearly \$3,000, while a PC AT clone from a reputable manufacturer will sell for about \$1,000 less. Although software prices are roughly comparable for the two systems, Macintosh peripherals are priced significantly higher. A Macintosh hard drive, for example, will cost nearly twice as much as an IBM-compatible hard drive.

Buying IBM equipment has always been a premium-priced purchase, too, and the tradition continues with the PS/2 line. The the Model 50 Z, equipped with a 60MB hard-

disk drive, is list priced at \$4,595. Dealers are discounting the PS/2 line, of course, but it still represents an investment of several hundred dollars more than a comparably equipped PC AT compatible to gain the still questionable advantages of MicroChannel Architecture.

Q: I travel a lot in my work. Does that mean I must buy an MS-DOS laptop?

When it comes to true portability—taking a computer on the road with you—there is a wealth of MS-DOS choices with weights starting at just over six pounds and prices at around \$1,000. Several models even feature 80286 or 80386 microprocessors, which should mean OS/2 compatibility. The only Macintosh portable (the Dynamac) weighs almost as much as a desktop Mac (since it's the guts of an actual Mac in a new case) and sells for \$5,000 and up. Of course, the file compatibility between systems described above pertains to portables as well, so there's no reason you can't work with a desktop Mac and an MS-DOS portable if you choose. However, it does mean added investment in software for two operating systems, plus a file-transfer system.

Q: What happens if the computer breaks down? How's the service situation?

As with most electronic equipment, if a computer malfunctions, it usually happens early on, while the machine is still under warranty, or not for years. In that light, computers are particularly reliable products.

Service availability, however, should be a factor in your purchase decision, although the relative merits of each system in this regard will vary depending on where you live. Apple, IBM, and most clone-makers have extensive networks of service providers across the country, often their authorized dealers. Some mail-order vendors (Dell Computer Corporation is one) offer service through outside service providers such as Honeywell Bull, which maintains nearly 200 service centers nationwide and will even come to your home or office if you're within 100 miles of a center.

If you live in a major metropolitan area, you probably won't have much problem finding someone to fix your computer. If not, you'd be well advised to locate the nearest service center before choosing your computer. Service is an area in which Tandy in particular has distinguished itself. The company's Radio Shack stores are located nationwide, and if the local dealership can't fix your Tandy computer, they can have it done promptly at another Radio Shack location.

And, of course, check the warranty. These vary tremendously, from Apple's "standard" 90 days to a year or more on several PC compatibles.

Q: My workspace is small. How much space will the computer take up?

If you're faced with a cramped desktop,

Forcing yourself into a purchase that doesn't make you happy when you see it on your desk every day is a no-win strategy.

the small size of a Macintosh SE could be a key consideration. The system unit is less than 10 inches square, while most PC compatibles take up at least twice as much turf. There is also a handle on the top of the SE. While the computer is too heavy to be considered portable in the sense that a laptop computer is portable, carrying a monochrome Mac from room to room (or even office to office if you have a car and a carrying case) is entirely practical. Among the more compact IBM compatibles are the Leading Edge Model D, the Vendex Headstart, the Zenith LP, and the Epson Equity computers. And you can also buy a stand for almost any PC that lets you place the main unit vertically on the floor.

Q: Since I'll probably need help operating the computer, shouldn't I buy the same type of computer that my friends and family own?

Quite possibly. With home-office workers, the availability of technical support is a prime concern, since obtaining the answer to a question promptly and accurately can spell the difference between productive computer time and hours, or even days, of frustration.

Most hardware and software manufacturers do their best to answer user questions, but often the most accessible source of information is other users of the same system. If you have an experienced friend able and willing to talk through problems you encounter on a particular system, that's a significant resource and should enter into making your buying decision.

Friends with compatible computers (who can be found in users' groups as well) also represent an opportunity for you to try out the software they are running on their systems and to trade public domain and shareware software. This can translate into a savings of time and money.

Q: All right, what if I want to play games, too? And isn't the Apple computer better for education?

For many home-office workers, the computer does double or triple duty. After you've crunched your last number for the day, the kids may take over the keyboard. Assuming you are willing to jeopardize the tax-deductibility of your computer, and risk peanut-butter-and-jelly fingerprints on the keyboard

as well, ask yourself how your selected system will suit the family's needs.

When it comes to both recreational and educational software, MS-DOS holds a considerable quantitative advantage over the Macintosh system. Although several publishers are producing exciting Mac game software—some of which takes advantage of the Mac II's color—your choices are much richer in the MS-DOS world, since virtually all games work in color.

The gap is much wider in educational software and shows little sign of narrowing (it's Apple's Apple II line, not the Macintosh, that's rich in software for learning). Mac owners will argue that programming languages such as LOGO and word processing and paint programs are educational, and they are indisputably correct. However, the amount of actual teaching software below the high-school level that's available for the Macintosh is sparse indeed, yet most educational software publishers today offer versions of their programs running under MS-DOS. One Mac advantage in education is its built-in, four-channel sound chip; most preschool programs take advantage of it by making the computer produce synthesized speech, which enhances learning.

Q: How important is the image I'll project with my computer purchase?

In virtually every purchase decision we make, image and style play a major role. Why do you drive the car you drive, choose the scent you wear, and live where you do? Making a choice that gets the job done is part of the decision-making process—the rest is a matter of personal style. And there is no denying that style is a key factor in selecting your computer.

Much of this image-building is rooted in advertising, of course, but there are real-world consequences to these perceived images. Software is created to appeal to the stylistic desires of a Mac or an MS-DOS user. Users groups attract different kinds of people. Co-workers, and possibly clients, develop an impression of you based on the computer you "drive."

You can probably rationalize any computer purchase based on some technical specification or software availability consideration. But like cars and stereo systems, a computer purchase is in many ways based on emotion and self-image. You want more than performance from your computer—you want it to be a reflection of your own personality. Your computer has to fit your needs on many levels, so forcing yourself into a purchase that doesn't make you happy when you see it on your desk every day is a no-win strategy, whatever the technological ramifications. ■

EDITOR'S NOTE: Next month's "Buyer's Guide to Computer Systems," with full details on more than two dozen computer models, will help shoppers choose the specific computer to best meet their needs.

Public Relations Specialist Risks Business and Wins

Bill Schoenfisch Gambles His Fledgling Business by Moving It and His Family Hours Away from Manhattan-Based Clients

BY KATHRYN BONN

SNAPSHOT

Bill and Nancy Schoenfisch, public relations specialists

RESIDENCE: Rifton, New York

BUSINESS: William Kent Schoenfisch, Inc., specializes in public relations for high-end office-furnishings manufacturers.

EQUIPMENT: IBM PC AT, QMS KISS laser printer with PSJet controller card, Canon Fax-Phone 10, Hewlett-Packard ScanJet scanner.

SOFTWARE: Microsoft Word, PageMaker, Microsoft Paint, Microsoft Windows

RX FOR SUCCESS: Constantly upgrading the computer hardware and software, phone system, and office equipment.

On Labor Day, 1980, Bill and Nancy Schoenfisch didn't throw out the Sunday *New York Times* real estate section as usual. When Nancy happened to glance at the listings, one ad had caught her eye: "Contemporary 3 bedroom house in Rifton, NY, on 44 secluded acres. Ponds, streams, wildlife—many extras."

STUMBLING INTO A DREAM HOUSE

Bill and Nancy were at home in West Patterson, New Jersey, in the house they'd been living in since they married in 1960. A former advertising and PR executive who had just started his own home-based public relations and marketing firm, Bill didn't even want to consider moving his growing business far from New York City, where his new clients were based. "Neither of us wanted to call the real-estate agent," Bill recalls. But they couldn't get the idea out of their minds. "We argued about it for the next four days."

Finally, to restore peace, Bill says, he made the call, "and of course it sounded

better than ever." They decided to take a day off, spend a few hours in the country, and "get this thing out of our systems." En route to the house, the Schoenfishs were struck by the area's breathtaking scenery. They drove beside a beautiful river and through a covered bridge, which they later discovered was the oldest of its kind in New York State. Rifton's downtown consisted of a country store and a one-person post office. It seemed like they'd stepped back in time 30 years. "We were living on a quarter-acre in New Jersey, paying tremendous taxes, and seeing overdevelopment all around us, and here was a place on 44 secluded acres!" Bill recalls.

The clincher came when they drove up the

long driveway and saw a little house nestled in the woods. "We got out of the car and said, 'That's our dream house!'" says Bill. The couple dug into their pockets and came up with \$20 between them as a holdover payment. The next day, they returned with their daughter, Jennifer Anne (now 17 years old), and a more substantial down payment. The Schoenfishs moved in two and a half months later on a rainy Thanksgiving eve.

FACING THE CONSEQUENCES

Bill's initial reluctance to uproot his newly begun business was understandable. With an MBA, substantial credits toward a doctorate in marketing, and 13 years of advertising and



Cedar trees, cardinals, and woodpeckers form the backdrop for Schoenfisch, Inc., which employs a full-time staff of four.

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PHOTOGRAPHS BY GREG GRIFFIN



public-relations experience, Bill had already taken a risk by launching his own company. Before breaking out on his own, he'd been a vice president and executive-committee member of a New York City advertising agency. But he felt he'd achieved all he could in that position and wouldn't become president anytime soon. He decided it was time "to start doing for myself what I'd been doing for others for years."

In 1979, with Nancy as his partner, Bill launched his home-based firm, William Kent Schoenfisch, Inc., specializing in public relations for high-end office-furnishings manufacturers. He had struggled to acquire a few prestigious architecture and interior design clients.

The 90-mile distance from New York City didn't scare Bill as much as Rifton's anonymity. "We were just getting started with our business," he recalls. "We were fighting for credibility and recognition, yet here we were moving to a place no one had ever heard of. 'That will be the end,' I thought. 'We'll be out of business and milking cows or something.'"

MEETING WITH SUCCESS

But the transition was smoother than the Schoenfischs expected. When they moved in 1980, they had three clients. Through direct mail and referrals, they increased that number to 13. Their clients currently include Alma Desk Company, a manufacturer of high-quality wooden office furnishings, and Atelier International, a furniture and lighting design company that has licensed the right to reproduce the furniture designs of Frank Lloyd Wright, Le Corbusier, and other architects.

Bill makes the business deals and meets with clients, and Nancy produces and mails out the press releases, company background materials, and newsletters. Schoenfisch, Inc., has successfully engineered press coverage for its clients in such magazines as *Interior Design*, *Progressive Architecture*, *Interiors*, and *European Travel and Life*.

Since the move to Rifton, the firm has grown. The office is stationed in an exposed loft overlooking the living and dining space. There are four work areas under the sloping roof for the full-time staff of four: Bill, Nancy, a client-relations associate, and a project coordinator. Schoenfisch, Inc., also employs four part-time workers—a bookkeeper, an office helper, and two writers.

They've managed to successfully house professional and personal life under the same roof. "The office arrangement doesn't interfere with our family life," says Nancy. "The staff enters through the front door and the stairs to the loft are right there. They usually leave at about 5:00 p.m., except for the one or two times a year when we work overtime to prepare for important trade shows. Only Bill and I work late or on weekends."

And business is booming. Schoenfisch, Inc., has graduated from a five-figure annual

income to a more-than-modest six figures. "In nine years, we've quintupled or more," says Bill. In fact, their only major problem has been space. Faced with the option to either rent commercial space or expand their office at home, they chose the latter. Next spring, the Schoenfischs plan to build an extension onto their house and triple their office space.

CHOOSING THE RIGHT TECHNOLOGY

One reason their business adapted well to the change was because the Schoenfischs had already begun to computerize. In the 1970s, they decided to look into computers. "There was one big caveat—some of our clients rushed into computerization. They ran out and bought a computer, a printer, and software, but didn't know what to use them for. These computers were literally gathering dust in their offices. I didn't want that to happen to us," Bill says.

"We were just getting started with our business. We were fighting for credibility and recognition, yet here we were moving to a place no one had ever heard of."

Before buying an IBM PC AT, the Schoenfischs spent several months researching their options, drawing up a list of tasks the computer would help their business to perform, and prioritizing their needs. Their checklist focused on the need to store, manipulate, and retrieve clients' mailing lists. "Our clients need to do a lot of mailings," says Bill, "for instance, invitations to product launchings, trade shows, and showroom openings."

The couple wanted to sort these all-important lists by addressee, title, function (press or consumer), and zip code, and then print the names onto letters, invitations, and envelopes. Producing this correspondence for the press, clients, and customers is another essential aspect of their business.

Even with the computer, the Schoenfischs were still forced to rely heavily on an outside type house to produce mailings. Nancy, an experienced typesetter, keyed in machine codes and formats—bold or italic print, large or small margins, flowery or basic typefaces.

Even though she was an old hand at coding commands, she knew that formatting errors are difficult to determine until the typeset document comes back from the type house. The transmissions, sent back and forth via modem, often got garbled, and Nancy longed to do more in-house preparatory work. She periodically visited the local computer store, asking if it would be possible to use her equipment for more advanced functions.

UPGRADING THE TECHNOLOGY

About a year ago, Bill and Nancy decided to upgrade their computer system in order to make the company's operations less dependent on outside help. Again carefully weighing the alternatives in the market, they bought a QMS KISS laser printer. Later, they added a PSJet controller card to make the laser printer PostScript- and HP-compatible, a Canon FaxPhone 10, and a Hewlett-Packard ScanJet scanner. Using Microsoft Word, PageMaker, Microsoft Paint, and Microsoft Windows, they're able to compose pieces themselves that previously could only be produced in conjunction with the typesetting house.

They can now offer clients hundreds of typefaces, format the pages, and, thanks to the ScanJet, precisely reproduce such graphic images as logos and drawings. "We're able to manipulate all these elements—the type, columns, paragraphs, logos, and line drawings, fax the result to the client's office in 15 seconds, get his or her approval, and send it to the printer. It's amazing," says Bill.

All of this technology is a great improvement over the systems that were in place when Bill worked at advertising agencies. "Throughout my career in New York City, things were done in a very traditional way," he remembers. Messengers were sent back and forth to type houses, galley proofs were read by hand and rushed to clients' offices, sometimes late at night—and then corrected galley proofs had to be returned; the cycle was repeated until the piece was perfect. With their current equipment, the self-sufficient Schoenfischs have streamlined the transfer of galleys—essential because of their remote location. They're also saving themselves time, money, and aggravation.

Bill and Nancy plan to keep abreast of the latest technological developments that can make their business more efficient and more productive. Communicating with clients via modem is one aspect they would like to develop—Bill still drives to New York City regularly for client meetings.

But, otherwise, the Schoenfischs have discovered that moving to the country hasn't limited them in the least. Their gamble has paid off well in terms of income and lifestyle. Their business is a full-fledged profitable operation under a sloping roof in the country. And having 44 acres all to themselves isn't too bad either. This risky business was well worth the gamble. ■

How to Do Your Own Public Relations

Tips from Public Relations Experts to Help You Design a Campaign, Get Publicity, Write a Press Release, and More

BY BARBARA STEIN

PUBLIC RELATIONS: *The promotion of rapport and goodwill between a person, firm, or institution, and other persons, special publics, or the community at large through the distribution of interpretive material, the development of neighborly interchange, and the assessment of public reaction.*

—Webster's Third New International Dictionary of the English Language.

What's so great about public relations? Ask Debbi Fields, who credits the success of her well-known cookie business to good public-relations tactics. Successful businesspeople like Fields use public relations to improve sales, bring in new customers and clients, change or renew a public image, and establish credibility.

Here are tips and strategies from Fields and three public-relations experts to help you put your business in the limelight. The other experts are Jay Conrad Levinson, author of *Guerrilla Marketing* (see *Up Front*, last month); Martha Frank of Wilson, Frank & Associates, a San Diego-based public relations and advertising firm catering to small and medium-size businesses; and Robin Gorman of New York City's Kanan, Corbin, Schupak & Aronow Public Relations, whose clients enjoy national recognition.

BARBARA STEIN is a contributing editor to HOME-OFFICE COMPUTING. She wrote the August cover story, "Making the Leap from Corporate to Home."



Cookie queen Debbi Fields makes dough with her special PR recipe for success.

Debbi Fields's Special Recipe

What's the secret ingredient in Mrs. Fields Cookies? Public relations, inside and out. Cookie queen Debbi Fields, 32, president, CEO, and founder of Mrs. Fields Cookies, is her own best PR person. She is the spirit and the heart of the company. "We're a people company," says the charismatic Fields, who presides daily over her empire of nearly 700 bakeries and cookie stores. "That's what we're all about. Certainly, Mrs. Fields is in the business of selling cookies, but that's just what the customer believes. What we really do is take care of people."

Fields has been leaving people with a "feel good experience" since August 1977, when she opened her first cookie store in a Palo Alto, California, mall. Only 20 years old and newly wed to economist Randy Fields, she wanted to share with the world the soft, chewy cookies she'd been baking at home. But by noon on that fateful August morning, no one had bought a single cookie. So she filled a tray, stepped out onto the sidewalk, and gave them away. People followed her back—to buy. Continuing that tradition today, "team members" at every store invite passersby to sample free cookies.

What's more, "cookie orphans"—cookies more than two hours old that haven't been sold—are donated to charity. And if you write to Fields, she'll answer you personally.

Clearly, Fields's actions—and those of her employees—support her philosophy; Mrs. Fields is selling happiness in the form of a cookie. The magic is remarkable customer service and a quality product; the company's motto is "Good Enough Never Is."

"Everything that I've learned about PR has been on-the-job training," says Fields. "There are some very specific, very definite secrets to being successful and happy. Regardless of what you try to do, these principles can help you succeed:

First, you've got to really believe in your product. By believing, it's incredibly easy to sell it, whether it's to bankers or to your next-door neighbor.

Second, you can't be afraid of selling. The greatest failure is not to try.

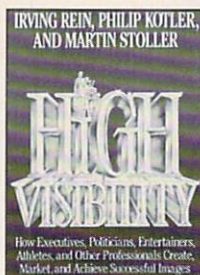
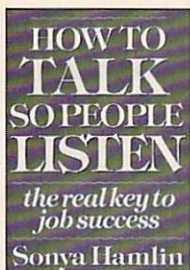
Third, never be satisfied with what you are doing—always try to do better and be better.

Finally, pursue your dream, but not for the sake of money. That makes it too easy to compromise."



"PR isn't necessarily positive. It can tear apart as well as enhance an image."

—Robin Gorman, senior account executive, Kanan, Corbin, Schupak & Aronow Public Relations



Three Helpful Resources

1. How to Talk So People Listen, by Sonya Hamlin (Harper & Row, 1988; 265 pp.; \$17.95). Hamlin explains all aspects of business communication from resolving conflicts and diffusing anger to handling breakfast and luncheon meetings and probing the needs and self-interests of an audience.

2. High Visibility: How Executives, Politicians, Entertainers, Athletes, and other Professionals Create, Market, and Achieve Successful Images, by Irving Rein, Philip Kotler, and Martin Stoller (Dodd, Mead & Co, 1987; 384 pp.; \$19.95). Describes how to use "higher visibility" to achieve success. Tells "How to market and manufacture human beings."

3. One Smart Cookie, by Debbi Fields (Simon & Schuster, 1987; 173 pp.; \$15.95). How a housewife's chocolate chip cookie recipe became a multimillion-dollar business.

Five Musts for Your Press Release

1. Date of announcement, date of release, and your city.
2. Your name, phone number, and address.
3. Strong lead paragraph that captures the essence of your message. Include who, what, when, and where.
4. Where to get more information.
5. Summary of who you are, your experience, and your message.

Checklist for Designing Your Own Campaign

1. Figure out what sets your product or service apart from your competitors'.

2. Practice communicating your message. Rehearse your message aloud and in writing until it's clear, crisp, and concise.

3. Become familiar with local clubs, organizations, and associations likely to support your effort. Search chamber of commerce directories and local business guides to uncover details about individual clubs—philosophy, size, and membership.

4. Introduce yourself to newspaper, magazine, TV, and radio professionals. You'll find them at social and business meetings and events such as grand openings, charity auctions, and fundraisers. "A 'guerrilla' truth," says Levinson, "is that publicity is proportionate to the amount of contacts you have."

That's how the pros do it. Get on a first-name basis."

5. Explore options for getting into print. Study local and national magazines, newspapers, supermarket circulars, and trade journals. Scrutinize consumer announcements that mention special events, new business ventures or products, seminars, lectures, workshops, and fundraisers. Pay attention to new publications whose editors may be receptive to new ideas and start monitoring publications to approach in the future.

6. Watch and listen to talk shows. "The format is not as hard to figure out as most people think," says Gorman. "It doesn't take an expert to be media savvy." For future program information and size and composition of target audiences, phone the station and request a media kit. Studying the kit itself is an exercise in PR.



Three Basics to Remember

1. PR is everything you do. "Everything you do relates to the public's perception of you and your company—from the way you treat customers to your phone conversations, business cards, letterhead, mailers, the way you dress, and your car," advises Frank. "Even the big companies tend to forget this."

2. Don't expect overnight success. "If you look into the background of people who seem to appear out of nowhere, you'll discover that they've been working at it for a long time," notes Gorman. "Building an image or strong PR campaign is a long-term pro-

cess. It takes time to develop rapport with the press."

3. You can't control PR. "The distinction between advertising and PR is that in advertising you can control the message, approach, timing, and placement," says Frank. "But with PR you don't know when or if it'll happen or even what it'll be." Moreover, adds Gorman, "remember that PR isn't necessarily positive. It can tear apart as well as enhance an image. Once you've issued information, you're at the mercy of the press, who may view things differently than you do."

"Everything you do relates to the public's perception of you and your company."

—Martha Frank, senior vice-president, Wilson, Frank & Associates



11 Ways to Get Publicity

1. Volunteer your services to clubs, organizations, and special interest groups. If you run a word processing or desktop publishing business, for example, offer to set up a mailing list or prepare a newsletter or mailer. In exchange, request that your "donation" be credited in the publication. The members will soon learn your name.

2. Donate your product or service as a fund-raising item. Charities, churches, and non-profit organizations are always searching for items to sell or auction. Target events that are covered by the media.

3. Perform a public service. Free medical tests, puppet shows, specialty demonstrations, and legal information are all announced in newspapers and on the radio. What expertise do you possess that will draw a crowd?

4. Set up a "lemonade stand." Position yourself outside a shopping mall, in a park, at a swap meet, or at a fair and set up a booth. Hand out free soft drinks, free information, free demonstrations, or free product samples. Attach your business card to every item. Recall that on Debbi Fields's first day of business, she gave away cookies on the sidewalk.

5. Send a newsletter to current and potential clients. Push your information, not your business. Share industry tips and your special knowledge. The idea is to keep your name in the client's mind.

6. Share the wealth. Clip and photocopy pertinent magazine or newspaper articles, attach a personalized "thought you'd be interested" note, and send it to current and potential clients. You could also publish a newsletter for a users' group.

7. Give seminars, workshops, and lectures and establish yourself as an expert. Public speakers are always in demand, especially at club luncheons and dinner meetings. Moreover, the general public will flock to a well-publicized lecture or seminar if the topic has wide appeal. Send a press release to the media. Present your information in an entertaining, brief, and direct manner. Avoid statements that sound like sales pitches. Afterward, mingle and chat with individuals. You may be invited to speak at other functions and, thereby, gain new clients. For example, if you run a design company spe-



cializing in computer graphics, you may offer to be a guest lecturer for a professional graphic designers' meeting.

8. Pitch a column or article to local newspapers, magazines, trade journals, national wire services, or columnists. Editors are always looking for information. Try to catch the reader's interest by offering unique consumer information. Write a one-page query letter describing your idea and submit it to the editor, by name. In the letter, you should explain clearly why your subject is appropriate for the publication's readers and include an outline. Attach your business card. "Then follow it up," says Gorman. "Persistence is good as long as it's cordial and you understand that the editor is probably pressed for time." If your idea is rejected, try again with a different approach. For example, if your company designs and manufactures a unique Christmas tree ornament, you could send query letters, press releases, and product photographs to editors of crafts magazines. Find out what trade publications industry buyers read and try to get editorial coverage in those magazines.

9. Try to get on radio and TV shows. Pitch your product or service by writing letters or calling station producers. Target local special interest shows; for example, if you are a nutritionist, you may gain new clients by appearing on a cable health show. "Position yourself as a problem-solver on a call-in

show," says Levinson. Listeners love to call in, and hosts always credit their experts.

"For TV, provide slides, photographs of your product, or a visual demonstration," says Levinson.

If you're being taped for an interview, be prepared. "Call the producer to find out the subject of the broadcast, what questions the host will ask, and what you should take to the studio," says Gorman.

10. Collaborate with another company whose product is compatible with yours. "You'd be amazed at how many retailers will cooperate with an aggressive home-business owner," says Levinson. "Suggest a joint marketing venture." Place fliers in another company's billing statements and return the favor. Ask that your business card or product be displayed on their counter. Or offer to lend your product to a company for a promotional photo, press kit, window display, or magazine shoot. If you import European hats, for instance, try collaborating with a fashion magazine for a photo shoot. You'll receive credit, instant exposure, and promote good will with an established company.

11. A little kindness goes a long way. Send a thank-you note to people who inquire about your service or product, to those who refer new clients, and to customers after each sale. Let these people know how much you appreciate their business. ■

Which Database Is for You—Flat File or Relational?

*If You Need to Link Information
Among Several Files,
Consider a Relational Database*

BY ROB KRUMM

For many of us, the image of arranging thousands of pieces of information into a convenient, multipurpose structure is one big reason we bought our computers in the first place. We all have lists, or would like to: names, addresses, phone numbers, tax-deductible purchases, or an inventory of possessions for an insurance policy. We've heard that a database program can help us create and maintain these lists, but the first hurdles arise when we must choose between two distinct forms of database software: file managers, often called flat files, and relational database managers, said to be more difficult to use but more powerful than flat files.

Which one do you need? Before I can help you answer that question, let's see how any database organizes pieces of information.

HOW DATABASES DO THE THINGS THEY DO

Databases are designed to record and organize information about *objects*. An object can be almost anything. For instance, you might want to keep track of people (clients, business contacts, or consultants), items (inventory, equipment, or real estate), and financial transactions (expenses, income, purchase orders, or taxes).

ROB KRUMM has written several computer books, including *Understanding and Using dBase III Plus* (Simon & Schuster/Brady Company).

While all objects have their differences, they're the same in that each object may be described by a unique set of *qualities*—inventories might have parts numbers, for example, and clients have names. So in order to keep track of your objects with a database, you must decide upon a series of qualities to track for each one.

A list or collection of data that details the qualities of objects of a particular type is your database *file*. You can have more than one file in your database system. However, whether or not you can extract information from two or more files at once for a printed report, say, is a key capability separating the relational (which can) from the flat file (which usually cannot). (See "Relational vs. Flat File.")

Database programs that can distill data from more than one file are described as *relational* because information in one file can be linked to *related* items in several other files. Relating data from various files demands extra work by the user, usually in the form of instructions written in the database's built-in programming language. Flat-file programs, on the other hand, are invariably simpler to use than relational database managers because the latter must contend with the complexity of linked files. Flat files—which are akin to index cards, with one entry per card and only one set of cards per file—do not have to account for any relationship between data files. (Note that some flat files,

RELATIONAL VS. FLAT FILE

Relational

Patient File				
NAME	ADDRESS	CITY	STATE	ZIP
Aken, Frederick	5201 Sycamore Ave.	Riverdale	NY	12178
Boxer, Michael	45 Linden Lane	Stamford	CT	02123
Brooking, Alice	34 Clinton St.	Brooklyn	NY	11223
Butkowski, Stanley	123 2nd Ave.	New York	NY	10003
Chang, Sam	43 Mulberry St.	New York	NY	10011
Davis, Larry	1024 University St.	Bronx	NY	14523
Graves, Alan	45-33 23rd Ave.	Sunnyside	NY	11289
Ito, Cynthia	95 Main St.	Flushing	NY	11366
Lee, Susan	347 Fifth Ave.	Brooklyn	NY	11222
Levine, Ariel	59 Main St.	Hoboken	NJ	05678
O'Rourke, John	1023 Hylan Blvd.	Staten Island	NY	10543
Perigotti, Elyse	652 Carroll St.	Brooklyn	NY	11512
Sands, Geraldine	192 West 85th St.	New York	NY	10024
Seymour, Jane	1095 Park Ave.	New York	NY	10001
Walther, George	8813 Merrick Blvd.	Jamaica	NY	11364
Washington, Carol	2125 Pitkin Ave.	Brooklyn	NY	11222
Williams, Charles	45 West 97th St.	New York	NY	11025

Relational databases can pull data from more than one file at a time through **linked fields**. You can link two fields in separate files when the fields are exactly alike; in this case, the NAME fields are the link.

Visit File			
NAME	VISIT	FEE	INSURANCE
Boxer, Michael	07-05-88	60.00	Prudential
Aken, Frederick	07-06-88	50.00	John Hancock
Aken, Frederick	07-08-88	50.00	John Hancock
Butkowski, Stanley	07-08-88	65.00	Provident
Aken, Frederick	07-09-88	50.00	John Hancock
Washington, Carol	07-09-88	40.00	None
Davis, Larry	07-09-88	100.00	Prudential
Boxer, Michael	07-12-88	50.00	John Hancock
Davis, Larry	07-12-88	60.00	Prudential
Butkowski, Stanley	07-14-88	65.00	Provident
Levine, Ariel	07-14-88	100.00	Prudential
Levine, Ariel	07-15-88	55.00	Prudential
Graves, Alan	07-16-88	100.00	None
Chang, Sam	07-16-88	50.00	John Hancock
Aken, Frederick	07-16-88	50.00	John Hancock
Levine, Ariel	07-16-88	55.00	Prudential
Washington, Carol	07-16-88	40.00	None

A key advantage of a relational database lies in its ability to extract information from two or more files at the same time. By using the database's built-in programming language, you can pull a name from the Patient File, for instance, reverse last and first names, and eliminate the comma so that the complete name can be used to address an invoice.

INVOICE

Dr. Lester Payne
555 Park Avenue
New York, NY 10028

DATE: 07-22-88

PATIENT: Frederick Aken
5201 Sycamore Ave.
Riverdale, NY 12178

VISIT	FEE
07-06-88	\$50.00
07-08-88	\$50.00
07-09-88	\$50.00
07-16-88	\$50.00

TOTAL DUE: \$200.00

Payable upon receipt.

After the link has been established between the NAME fields, you can gather information from any record in any file that has the required name. For example, all of the visits Frederick Aken made to this doctor in July 1988 have been pulled from the Visit File, along with the dates and fees, and have been inserted into the invoice along with the name and address from the Patient File.

Flat File

Name & Address File					
LAST NAME	FIRST NAME	ADDRESS	CITY	STATE	ZIP
Aken	Frederick	5201 Sycamore Ave.	Riverdale	NY	12178
Boxer	Michael	45 Linden Lane	Stamford	CT	02123
Brooking	Alice	34 Clinton St.	Brooklyn	NY	11223
Butkowski	Stanley	123 2nd Ave.	New York	NY	10003
Chang	Sam	43 Mulberry St.	New York	NY	10011
Davis	Larry	1024 University St.	Bronx	NY	14523
Graves	Alan	45-33 23rd Ave.	Sunnyside	NY	11289
Ito	Cynthia	95 Main St.	Flushing	NY	11366
Lee	Susan	347 Fifth Ave.	Brooklyn	NY	11222
Levine	Ariel	59 Main St.	Hoboken	NJ	05678
O'Rourke	John	1023 Hylan Blvd.	Staten Island	NY	10543
Perigotti	Elyse	652 Carroll St.	Brooklyn	NY	11512
Sands	Geraldine	192 West 85th St.	New York	NY	10024
Seymour	Jane	1095 Park Ave.	New York	NY	10001
Walther	George	8813 Merrick Blvd.	Jamaica	NY	11364
Washington	Carol	2125 Pitkin Ave.	Brooklyn	NY	11222
Williams	Charles	45 West 97th St.	New York	NY	11025

Even though a flat file cannot link fields as a relational database can, you can still transform data into several formats. In this example, mailing labels have been made only for those clients who live in

Alice Brooking
34 Clinton St.
Brooklyn, NY 11223

347 Fifth Ave.
Brooklyn, NY 11222

652 Carroll St.
Brooklyn, NY 11512

2125 Pitkin Ave.
Brooklyn, NY 11222

Brooklyn. Note that the names in the flat file are in separate fields (LAST NAME and FIRST NAME), not one field. That's because a flat file has no programming language for reversing the names as in the relational example above.

Remember that a relational database can ordinarily do everything a flat-file database can do, but not the other way around.

such as Q&A 3.0, offer limited linking capabilities through a lookup function.)

HEADING INTO FLAT-FILE LIMITS

Imagine computerizing the records of a medical office. The primary objects are the patients. First, think about what qualities you want to record about each patient. A patient has a name, an address, a phone number, a date of birth, a sex, a date when he or she first becomes a patient, a medical insurance carrier, and so on. When you have determined the list of qualities—called *fields* in database work—you have found the *structure* of your database. You fill out your database by entering information into the fields set up for that particular file, creating a *record* for each item.

This assumes that all objects can be described by a simple list of qualities, which is how a flat file organizes information. But the real world is more complex than that. In our medical-office illustration, the idea of a singular list of qualities runs into some practical problems.

Once you have created a database file of patients, you may then want to record information on each visit made by each patient. Your first instinct might be to add another set of fields to the structure that lists, for instance, the date, time, length, and purpose of the visit.

But what happens when the same patient makes a second visit? Do you create a new record for each visit, duplicating information—such as name, address, and phone number? I wouldn't recommend it, because it would both waste time and could be a source for error as you key in the same data again.

Another solution could be to expand the structure, with a new set of fields for a second or third visit in each record. This method would work if you knew in advance that there was a limit to how many visits each patient made. But in reality, with each patient, the number of visits varies in no predictable pattern. Also, since each additional visit could mean adding at least four new fields to your file—visit date, time, fee, and purpose—you would probably bump up against the database's limits for number of fields in a file. Even if you didn't hit those limits, too many fields containing similar data can make the structure of a database unwieldy. For example, your eye might not

easily distinguish among fields called Date 1, Date 2, and Date 3.

The problem is only one of several difficulties that can arise when you attempt to fit all of the qualities of an object into one database file with a single list of fields. Here, you have encountered a case where one object—the patient—can have repeated instances of the same quality—visits to the doctor. In a sense, "visits" is a smaller list or heading within the larger list of patients. Several other qualities need to be stored under that heading. By letting you make a heading into a separate, but linked, file, relational databases can help you overcome flat-file limits.

HOW RELATIONAL DATABASES RELATE THIS TO THAT

Tasks that the medical office needs to carry out require a database that accommodates a more complicated structure in which a field in one list can be related to a separate list of different fields. One way to solve the problem caused by multiple visits of the same patient is to create two data files, one that lists the qualities for each patient and another with separate records for each visit. In order to integrate these two files into a single database system, both files must share one quality in common—in this case, the patient's name. The common field is called the *link*. By linking two files with the same field, you can enter one record for each patient appointment in the visit file without having to repeat the information stored in the patient file. Then, as needed, you can pull data from both files for either printed reports or an on-screen view.

The goal of a relational database is to overcome problems that occur when the connections among data qualities are too complex to fit into a simple list, or flat file. Relational databases use linked fields in different files to perform what's called *lookup* operations. For example, to produce a monthly invoice for each patient that includes information about each visit, a relational database would take the patient's name and address from the patient file, and then use that patient's name to search the visit file for all records that contain his or her name. The combined information creates a complete description of the patient's records without requiring duplicate entries—a key benefit of a relational database.

WHICH TYPE OF DATABASE DO YOU NEED?

Now that you've seen the differences between the simple lists of flat-file databases and the linked lists of relational databases, you can ask yourself some elementary questions about the information you need to record. Begin by listing the qualities you want to record: your potential fields. Then decide if each quality is a straightforward data item—such as a name—or a topic heading, such as sessions with clients, which requires a list of items with its own set of qualities or fields. For instance, in the medical-office example, a list of vaccinations and allergies for each patient would be an independent topic heading. Depending on the complexity of the list, you may have to create a separate file to record this data and link it to both the patient file and the visit file.

One of the most challenging problems encountered in relational databases is establishing links between data files. Four popular programs that can do this are *dBase III Plus* (Ashton-Tate Corporation), *4th Dimension* (Acus), *R:BASE* (Microrim), and *Paradox* (Borland International). All take similar approaches to creating a database, but very different approaches to relating the data files. In working with relational databases, learning the built-in programming language is another challenge that can be time-consuming. However, knowing the language will give you a lot more power to transform your data for a multitude of reports.

As a rule of thumb, you ought not select an underpowered database. If an analysis of your needs indicates that relations between files are required, or even might be, you should consider making the leap to a full relational database. Investing time to set one up now will mean saving time when it comes to using your accumulated data. Remember that a relational database can ordinarily do everything a flat-file database can do, but not the other way around.

However, if your analysis indicates that your needs can be handled by simple lists, you could save a lot of time and money by using a good flat-file database or even an advanced spreadsheet such as Microsoft *Excel* that includes flat-file database operations.

But whichever type of database you choose, you'll have the power to manipulate your data in ways that other types of applications can't match. ■

Laser Printers

*A Question-and-Answer Guide, Reviews, and Shopping Chart
To Help You Find the Laser Printer Best Suited
To Your Business Needs*

BY HENRY F. BEECHHOLD



While most of us don't judge books by their covers, we do give flashy book jackets a second look.

Likewise, who isn't more likely to notice and read crisp laser-printed correspondence, proposals, resumes, reports, and newsletters than drab, dotty printouts ejected from printers in need of new ribbons? For this and other reasons, many a HOME-OFFICE COMPUTING reader is thinking about replacing his or her noisy, old dot-matrix or daisy-wheel printer with a laser printer that can make any piece of text look impressive.

For businesses that are either thinking

HENRY F. BEECHHOLD, a contributing editor, frequently reviews hardware for HOME-OFFICE COMPUTING.

about or currently using desktop publishing to produce advertising pieces, brochures, technical documentation, small books, and other materials that need to look professionally printed, the laser printer is crucial. Desktop publishing lets you combine words and pictures on a page and produce camera-ready copy. In some cases, you can bypass the print shop entirely and use the laser printer for the final product.

To help you understand laser printers and lead you to the printer that is best suited to your needs, we've compiled a list of commonly asked questions and answered them. Once you've been through this question-and-answer guide and have looked through the reviews and buyer's guide chart, the task of finding the right printer should be a lot easier.

Q. What are laser printers? How do they differ from other printers?

A. Lasers are the fastest, quietest, and highest-quality printers available today. Most laser printers bear little resemblance to other types of printers—there are no tractors, ribbons, or printheads. Instead, you're faced with a large, rectangular enclosure of substantial weight with such assorted apparatus as a control panel, a paper input tray, and a paper output chute.

Typically, lasers look and function more like photocopiers. But while many copiers use optical lens systems for imaging, laser printers use low-power laser beams. With the help of a rapidly spinning mirror, the laser beam "writes" the image onto a metallic drum, a process that creates electrically

charged regions exactly matching the desired images—print and graphics. These regions attract toner to the drum, which then transfers the images to paper, a full page at a time. To set the images and prevent smearing, the paper is heated before being ejected from the printer.

Q. Does print quality vary from one laser printer to another?

A. While any laser printer will produce a better-looking page of text than a dot-matrix printer, laser printers are by no means equal in print quality. Some are merely passable—the blacks lacking the density that gives a page snap and sparkle. Until you've carefully examined the text and graphics quality of a number of different brands, you're not ready to make a purchase. A bargain-priced laser printer is no bargain if it's only marginally better than the printer you're using. And if your budget is tight, you'd do well to look at an inkjet printer like the Hewlett-Packard DeskJet, which turns out laser-like text and graphics. Although you sacrifice speed and memory with an inkjet printer, the less costly machines may be well suited to your applications.

Q. How fast are they?

A. The speed of operation—called throughput—is second only to print quality as a reason for owning a laser printer. Whereas the speed of impact dot-matrix printers is measured in characters per second (cps), that of laser printers is measured on a pages-per-minute (ppm) basis. Many models are rated at eight pages per minute, when in fact they deliver six or seven. This output is for straight text; add graphics and the throughput slows appreciably, just as it does with dot-matrix printers. But while the letter-quality (LQ) or near-letter-quality (NLQ) mode cuts a dot-matrix's speed to as little as a third of draft-quality printing, a laser printer grinds out text in any font at about the same rate.

Q. What's paper handling like with a laser printer? And what kind of paper is needed?

A. Paper is typically fed into the laser printer through a paper tray (or cassette) that looks like a copier tray. Some of the more expensive laser printers, such as the Panasonic Laser Partner, take two trays simultaneously, one for standard paper, one for legal size.

Most laser printers output pages face down so that pages are arranged in the proper order. Some eject sheets face up, which means that, in multipage documents, the page order is reversed. Some let you choose between the two.

Regular copy or bond paper (20 to 24 lb.) will do the job well, as long as it is relatively smooth. But, for the most impressive output, you should use high-quality paper designed for laser printing, such as Hammermill's Laser Print Substance 24.

Q. How much noise do laser printers make?

A. Since images are not formed with an impact device (printhead), there is no actual printing noise. But the operating motor and fan combine to produce noticeable if not bothersome sound levels, certainly well below the racket produced by either typewriters or dot-matrix printers.

Q. How much do they cost?

A. Prices range from \$1,500 to more than \$10,000. The prices have moved steadily downward to the point where they are beginning to intersect with those of high-end impact printers. Will prices drop below the magic thousand figure? Probably, but not appreciably.

Q. Are all laser printers compatible with all brands of computers, or do I need to buy a new printer interface?

A. Most laser printers are ready to be hooked up to any IBM PC or compatible, Apple II/III, Atari ST, or Amiga, as long as the computer is equipped with a parallel or serial port. If you own a Macintosh, make sure the printer has either a serial interface or AppleTalk connector.

Laser printer interfaces are no different than other printer interfaces. Usually you need do nothing more than detach your computer's present printer cable from your old printer and attach it to the new laser printer.

Q. How easy are laser printers to set up?

A. You cannot "plug-and-play" laser printers right out of the box. Be prepared to spend about an hour setting up the printer. You'll usually need to install the cleaning pad, paper tray, developing unit, toner cartridge, and photosensitive drum assemblies. The drum, a user-replaceable unit, must be shielded from bright light and kept free of such contamination as fingerprints.

Q. How much power does a laser printer use?

A. As much as 8 to 10 times more electrical power than conventional printers. At idle, power consumption is low, but when printing, a laser printer can draw more than 850 watts. Make sure that the outlet you plan to use has enough power for a laser printer, somewhere between seven and nine amps (about the same power required by a large air conditioner).

Q. Why does a laser printer need memory? And how much does it need?

A. Before a page is printed, a laser printer stores the text and graphics into memory.

Generally, the more memory, the better. Most laser printers provide for memory expansion up to 2MB, a size you'll need if you're doing a lot of high-resolution (300 dots per inch) graphics. For straight text, with only an occasional chart or graph, 512K should be sufficient.

Q. What are page description languages (PDL)?

A. A PDL is the language used to communicate between the printer and the computer. Most of you will never need to learn the language because it is usually imbedded in the software that you are using.

The leading PDLs are PostScript, used by the Apple LaserWriter IINT, and HP Printer Control Language (HP PCL), used by the HP LaserJet Series II. PostScript gives you more flexibility than other PDLs because of its scaling ability. But you will pay more for a PostScript printer because of extra hardware needed in the printer and for licensing fees that the manufacturers must pay to Adobe Systems in order to use the language.

(For an in-depth explanation of PDLs, turn to this month's Desktop Publishing column on page 36.)

Q. What kind of software do you use with laser printers?

A. Almost all the major software packages support laser printers. If yours doesn't, make sure that you have the latest version. The problem is that the software you have may not support your particular printer. This is where emulations come into play. For instance, it is unlikely that your software supports the AST Turbo Laser/PS, but this printer can emulate both PostScript and, for an additional \$695, the HP LaserJet Plus. All you have to do is set both the software and the printer to the same mode, HP LaserJet Plus, for example, and your printer is ready.

Q. What are fonts?

A. A font is a set of characters (letters, numerals, symbols) in a certain typeface, point size, and enhancement (bold, italic, compressed, wide, and the like). Thus, a printer offering a lot of fonts is not necessarily offering a lot of typefaces, but rather a few typefaces in a number of versions.

With a laser printer, you can create a professional look in printing using such devices as proportional spacing, so that narrow letters like "i" are given less space than wider letters. Another feature is "kerning," in which some letters are "tucked under" others, "e," for example, nestled beneath "w." A laser printer with the right fonts can do these little tricks without difficulty.

Fonts are available in three forms: built-in (native), plug-in (cartridge), and load-in (soft fonts). The number of built-in fonts can vary greatly. At least one printer, the Kyocera F-1000A, comes with 79 built-in fonts. At the other end is the minimalist approach as practiced, for example, by the Hewlett-Packard LaserJet Series II, which comes with only six built-in fonts.

If you want more than just the built-in fonts, you buy either plug-in font cartridges or "soft" (disk-based) fonts. A font cartridge (or card) commonly contains several sizes of a particular type style and is accessi-

ble to the printer under the guidance of the software driver being used by your software. The soft fonts behave just like the fonts in ROM, but they must be loaded into the printer's memory prior to a printing session.

Q. What's a duty cycle?

A. Duty cycle refers to the maximum number of printouts your machine should make each month. The first generation of laser printers (e.g., Hewlett-Packard LaserJet) offered a duty cycle of 3,000 pages per month. Current printers offer duty cycles as high as 25,000 copies. The higher the duty cycle the more expensive the machine. However, if your expected use is well within the lower duty-cycle figure, don't forego features (like a lot of built-in fonts) that are important to your particular situation in order to obtain copy capacity you don't need.

Q. What kind of servicing does a laser printer require?

A. Whatever the duty cycle, the printer will eventually require servicing—an expensive proposition. The way to minimize trouble is to follow the routine maintenance procedures specified in the owner's manual. With some printers, you can do little more than keep the easily accessible parts of the printer clean and replace toner cartridges as needed. With other printers, you can replace drums and certain other parts as well as toner cartridges. Before you buy a laser printer, obtain the whole service and maintenance story from a knowledgeable salesperson or technician. It might pay to take out a service contract.

Q. How much do toner cartridges cost?

A. Toner cartridges cost a lot more than printer ribbons! New Hewlett-Packard cartridges,

for example, run about \$110 each and should print about 3,000 pages (about three cents per page); they print fewer pages and, therefore, cost more per page if you use a lot of graphics.

Q. How do I make my choice?

A. When buying a laser printer, the most important variables to consider are (1) productivity features (memory size and expansion capability, number and type of fonts, emulations, useful accessories); (2) quality and speed of output; (3) cost; (4) ease of setup and use; (5) reliability; (6) type of page description language; (7) maintenance; and (8) compatibility with your software.

Make a checklist of your needs and shop and test. The following reviews and buyer's guide chart should help you narrow down your choices.

BUYER'S GUIDE TO LASER PRINTERS

What follows is a guide to 30 of the best laser printers on the market. All are manufactured by reputable companies and should be readily available nationwide. We've included printers that support PostScript, the HP LaserJet Series II and the HP LaserJet Plus.

Company/ Model	Suggested Retail Price	Printer Emulation ¹			Memory Standard/Maximum	Maximum Speed (PPM)	Duty Cycle	Built-in Fonts	Font Cartridge slot(s)	Interfaces	Maximum Number of Sheets per Cassette/Tray	Warranty (Months)
		Hewlett-Packard LaserJet II	Hewlett-Packard LaserJet Plus	Post-Script								
ALPS LPX600	\$2,795	No	Yes	No	2MB/2MB	6	3,000	4	1	P, S	100	12
AST TurboLaser/PS	\$5,495	No	\$695	Yes	3MB/3MB	8	10,000	35	None	AP, P, S	250	3
Apple LaserWriter IINT	\$4,599	No	No	Yes	2MB/2MB	8	5,000	35	None	AP, P, S	200	3
Brother HL-8	\$2,695	No	Yes	No	1MB/3MB	8	3,000	20	1	P, S	200	12
C. Itoh Jet-Setter II	\$2,195	Yes	Yes	No	512KB/2MB	5	3,000	6	2	P, S	100	12
C. Itoh LIPS II	\$3,545	No	Yes	No	512KB/2MB	10	15,000	6	2	P, S	250	12
Canon LBP-8II T	\$3,950	No	Yes	No	512KB/4.5MB	8	3,000	16	8	P, S	200 (2 trays)	12
Hewlett-Packard LaserJet Series II	\$2,695	Yes	Yes	No	512KB/4.5MB	8	5,000	6	2	P, S	200	12
IBM Personal Pageprinter	\$4,999	No	No	Yes	2MB/2MB	6	4,000	30	None	N/A	150	12
Kyocera F-1000A	\$2,895	Yes	Yes	No	512KB/1.5MB	10	10,000	79	2	P, S	250	3
Kyocera F-2010	\$4,695	Yes	Yes	No	1.5MB/1.5MB	10	10,000	79	2	P, S	250 (2 trays)	3
NEC LC860+	\$2,995	No	Yes	No	1.3MB/1.3MB	8	5,000	4	2	P, S	250	12
NEC LC890	\$4,795	No	Yes	Yes	3MB/3MB	8	5,000	35	2	AP, P, S	250	12
Office Automation Systems LaserPro Express Series II	\$2,495	No	Yes	No	1MB	8	5,000	14	1	P, S	250	12
LaserPro Silver Express	\$2,995	No	Yes	No	1.5MB	8	5,000	14	1	P, S	250	12
Okidata LaserLine 6	\$1,945	No	Yes	No	272KB/656KB	6	3,000	15	1	P or S	150	12
Panasonic Laser Partner	\$2,595	Yes	Yes	No	512KB/1.5MB	11	5,000	11	1	P, S	250 (2 trays)	12
Personal Computer Products LaserImage 1000-IS	\$4,695	Yes	Yes	Yes	2.5MB/5.5MB	6	3,000	32	1	P, S	150	3
LaserImage 2000-IS	\$5,295	No	Yes	Yes	2.5MB/6MB	8	10,000	31	1	P, S	250	3
QMS-PS 810	\$5,495	Yes	Yes	Yes	2MB/3MB	8	5,000	35	None	AP, P, S	200	12
Quadram QuadLaser I	\$3,495	No	Yes	No	2MB/2MB	8	10,000	2	None	P, S	250	3
Quadram QuadLaser PostScript	\$5,295	No	No	Yes	3MB/3MB	8	10,000	35	None	AP, P, S	250	3
Qume LaserTEN Plus	\$2,795	No	Yes	No	512KB/512KB	10	5,000	33	3	P or S	250	6
Ricoh PC LASER 6000	\$2,495	No	\$199	No	1MB/2MB	6	3,000	8	1	P, S	150	3
Sharp JX-9300	\$2,795	No	Yes	No	396KB/2MB	6	3,000	2	1	P, S	100	12
Star Micronics LaserPrinter 8	\$2,799	No	Yes	No	1MB/2MB	8	4,000	4	2	P, S	200	1
Texas Instruments OmniLaser 2106	\$4,595	No	Yes	Yes	2MB/2MB	6	3,000	35	1	AP, P, S	150	3
OmniLaser 2108	\$5,995	No	Yes	Yes	2MB/2MB	8	10,000	13	1	AP, P, S	250	3
Toshiba PageLaser12	\$3,799	No	Yes	No	512KB/2MB	12	25,000	3	3	P, S	250	12
Xerox 4045 Model 150	\$4,995	No	No	No	1MB/2MB	10	15,000	2	4	P, S	250	3

¹Additional emulation modes may be included: AP = AppleTalk; PPM = Page per minute; P = Parallel; S = Serial

MANUFACTURERS

ALPS America (800) 327-ALPS, (800) 257-7872 in CA; AST Research, Inc. (714) 863-1300; Apple Computers, Inc. (408) 973-2222; Brother International (201) 981-0300; C. Itoh Electronics, Inc. (714) 757-4492; Canon U.S.A., Inc. (516) 488-6700; Hewlett-Packard Company (800) 752-0900;

IBM (800) IBM-2468; Kyocera Unison, Inc. (415) 848-6680; NEC Information Systems, Inc. (800) 343-4418; Office Automation Systems, Inc. (619) 452-9400; Okidata (800) OKI-DATA; Panasonic Industrial Company (201) 318-0785; Personal Computer Products, Inc. (800) 225-4098, (800) 262-0522 in CA; QMS, Inc. (800) 631-2692, (205) 633-4300 in AL; Quadram Corp. (404) 923-

6666; Qume Corp. (408) 942-4000; Ricoh Corp. (800) HI-RICOH (for your nearest dealer) or (201) 882-2000; Sharp Electronics Corp. (201) 529-8901; Star Micronics America, Inc. (212) 968-6700; Texas Instruments, Inc. (800) 527-3500; Toshiba America, Inc. (800) 457-7777 (for your nearest dealer) or (714) 583-3000; Xerox Corp. (213) 333-2151.

Laser Printer Reviews

Five Smart Choices for Your Home Office

Here are reviews of five of the best laser printers on the market. (The Apple LaserWriter IINT and Hewlett-Packard LaserJet Series II are, far and away, the best sellers.) For more specifications on these printers—as well as descriptions of more than two dozen other laser printers—refer to the accompanying chart. This chart includes such information as price, built-in fonts, speed, printer emulation, memory, warranty, and manufacturer's phone number.

Apple LaserWriter IINT

RATING: ★ ★ ★ ★

SUGGESTED RETAIL PRICE: \$4,599



When the Apple LaserWriter was introduced in 1985, it set new standards for text and graphics printing. In spite of the \$6,999 price tag, LaserWriters sold well because they offered high performance to match the price. Apple has recently introduced the LaserWriter IINT, an improved replacement for its LaserWriter Plus. And, it's priced lower than any of Apple's previous PostScript LaserWriters: \$4,599.

The size and shape of the NT is different from earlier models; it has a lower, sleeker profile and is much lighter. It weighs only 45 pounds compared to a hefty 77 pounds for the earlier models.

The LaserWriter IINT is faster, too, reaching its rated eight-page-per-minute printing speed on simple text documents. It has 2MB of RAM, enough for a full page of graphics with plenty left over for downloaded fonts.

What else is new with this model? The paper handling is much improved. Earlier models used the Canon LBP-CX engine, which made the paper travel a torturous path before emerging as finished copy. The NT has a much simpler and more reliable design based on the Canon LBP-SX engine.

Paper input is now handled by a larger paper tray—200 sheets compared with the rather skimpy 100-sheet capacity of previous models. The input tray has a nicely designed manual feed slot that simplifies the printing of envelopes greatly—a pesky problem for most printers. In fact, envelopes are easy to

print using the NT.

Paper output is also a major improvement in the new design. Earlier models generated the printed paper face up. The new model, however, ejects pages face down. And, because the paper path is straighter, there are fewer paper jams, especially with heavier stocks.

There is a new toner cartridge that produces darker blacks. The original Laserwriters printed large areas of black with a washed-out dark gray tone.

All in all, the new LaserWriter IINT is a dream—with beautiful text in a spectacular array of fonts and stunning graphics coming forth from this streamlined, quiet desktop partner for your computer. —ROGER HART

Hewlett-Packard LaserJet Series II

RATING: ★ ★ ★ ★

SUGGESTED RETAIL PRICE: \$2,695



For MS-DOS computer owners, the Hewlett-Packard LaserJet Series II is the laser printer by which all others are judged. With a speed of eight pages per minute, a respectable price tag, and a well-reputed name, the HP LaserJet II is hard to beat.

The LaserJet II comes with 512K of memory, which is enough for straight text output but not for graphics or desktop publishing. The only question to ask when adding memory is: How much is enough? You have the option of adding up to an additional 4MB for a total of 4.5MB of memory. This is more than you're ever likely to need.

The machine comes with only six resident fonts, but adding fonts is no problem. The printer's two cartridge slots will accept any of more than 20 different cartridges (\$150 to \$330 each). Also, with the added memory, you can download up to 32 soft fonts into the printer. These soft fonts are available from Hewlett-Packard and from third-party companies such as Bitstream.

The 200-sheet input tray and 100-sheet face-down output tray give you above-average paper handling. Unfortunately, the trays will hold only 8.5-by-11-inch paper. If you

need to print out on any other size paper, you must use the manual feed slot.

My only complaint about the LaserJet Series II is that the printer doesn't emulate any other printers. This is not a problem when you're using software that supports laser printers because, if it supports any laser printer, it will invariably support the LaserJet II. But you won't be able to run software that supports only dot-matrix printers.

Overall, the LaserJet II has more than earned its place at the top of the heap. Unless you want and need the extra capabilities of a PostScript printer, the LaserJet Series II is probably your best choice.

—PASQUALE M. CIRULLO

Okidata Laserline 6

RATING: ★ ★ ★

SUGGESTED RETAIL PRICE: \$1,945



I've always had a soft spot in my heart for Okidata printers. My very first printer was the incredibly rugged Okidata 92. I still have it, and it still works (though it now sits in storage alongside my faithful Kaypro II). My new flame is the Okidata Laserline 6, offering 15 fonts and HP LaserJet emulation for the bargain price of \$1,945. (The Hewlett-Packard LaserJet II comes with only six fonts.)

The Laserline 6's paper handling is simple and straightforward. Its paper tray holds 150 sheets, and the pages come out face down and, thus, correctly ordered. Though it's much better than other lasers I've used, there is still some work to be done on envelope handling: My envelopes always came out smudged.

The best thing about the Laserline 6 is the *LaserControl* software furnished with the printer. *LaserControl* is a RAM resident program that pops up when needed to set up the printer no matter what software you're using. It relieves the headache of making software and printers work together properly.

Now the bad news. The Laserline comes with just 272K of memory and can be expanded only to 656K. Also, it prints at a modest rate of six pages per minute. Then

there was the service problem. After flawlessly printing hundreds of pages, the toner finally ran out and had to be replaced. In changing the toner, I had to clean the transfer wire. To accomplish this feat I had to lift the toner and drum assembly. When I lowered the assembly, I apparently used too much force, and a plastic gear snapped. I'm not sure if I was heavy-handed or if the plastic was flimsy, but the Laserline 6 stopped working. It looks as if replacing the part is no big deal, but the manufacturer shouldn't have put a critical element in a place where it could be broken by a clumsy reviewer.

—STEPHEN MILLER

Ricoh PC LASER 6000 Printer

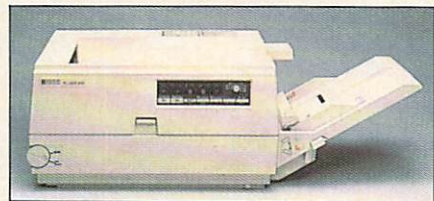
RATING: ★ ★ ★

SUGGESTED RETAIL PRICE: \$2,495

Don't be fooled by the Ricoh PC LASER 6000's trim lines: This is a powerful machine loaded with features. The Ricoh PC LASER 6000 is not, however, bargain-priced equipment. The list price is \$2,495 plus \$199 for the Hewlett-Packard LaserJet-Plus Emulation Module, a small plastic card that plugs into a slot in the side of the printer. You can buy an HP LaserJet Series II for the same price. But with the LaserJet, you won't obtain Ricoh's built-in goodies.

The Ricoh PC LASER 6000 comes with eight built-in fonts. For the serious typographer, Ricoh offers several font cartridges (\$249 each), which are plugged into the slot on the side of the machine. (If you're using the HP emulation card, you cannot use any cartridges.) You can also download soft fonts into the 1MB of standard memory that comes with the machine.

You manipulate the 6000 by means of a membrane-type control panel, with most procedures requiring only a press or two. Lurking behind the panel, however, is an elaborate menu system, and certain activities take as many as eight steps—a lot of fiddling.



The input paper tray accepts up to 150 sheets of letter-, legal-, or European-size paper, as well as envelopes, transparencies, and labels. An optional paper tray (\$499) holds 250 sheets. Paper is ejected face-up or face-down. You choose the direction by using a knob on the side of the printer.

The PC LASER 6000's serviceable parts come as three disposable components: the optical drum unit (\$199), the cleaning magazine (\$99), and the toner cartridge (\$29). The

TERMS YOU SHOULD KNOW

Bit-Map: a dot-by-dot representation of text or graphics.

Duty Cycle: the maximum number of printouts your laser printer should make each month.

Emulation: the ability of one printer to duplicate the functions and operations of a different printer.

Font: a set of characters in a certain typeface, point size, and enhancement.

HP Printer Control Language: a popular page-description language used by the Hewlett-Packard LaserJet Series II.

Page Description Language: the language a laser printer uses to construct a page in its memory before it prints.

Pages Per Minute (PPM): the number of pages a printer can print per minute.

PostScript: a standard page-description language used by the Apple LaserWriter IINT.

Printer Driver: the part of a software package that enables your computer to recognize and communicate with a particular type of printer.

Scaling: the ability to enlarge or reduce a font.

Toner Cartridge: the container where toner (ink) is kept before being transferred to an electrically charged drum inside the laser printer.

Typeface: a stylized character set (such as Courier, Roman, or Century).

purpose of this modularity is to allow you more miles between major overhauls than you can presumably get from the Canon/HP design.

The Ricoh PC LASER 6000 is a good example of the current generation of small-system laser printers. Is it worth the cost? With HP emulation active, there's a strong likelihood that you won't use Ricoh's "native" print capabilities and might, therefore, be better off buying an HP LaserJet II. On the other hand, if you intend to use Ricoh's built-ins and are happy knowing that add-on emulations are available for "emergencies," then the Ricoh is a sensible choice.

—HENRY F. BEECHOLD

Toshiba PageLaser12

RATING: ★ ★ ★ ★

PRICE: \$3,799



After reviewing the Toshiba PageLaser12 for about seven months, saying goodbye won't be easy. From the moment I opened the box and took the printer out, it was certainly a pleasure to use.

Setting up the printer took about 45 minutes. Setup wasn't complicated; the manual completely explained every step and contained clearly marked photographs.

Once the printer is set up, you have to

reconfigure your software. Even though none of the software packages I use support the PageLaser12, this was not a problem because the printer emulates five different printers. I tried each of the emulations, and they all worked well.

Working with the Toshiba PageLaser12 was a joy. The control panel has six pressure-sensitive pads that allow you to cycle through the menu and set parameters. All menu items and choices are displayed on a 16-character LCD display that gives a full explanation instead of a two- or three-digit code.

At a speed of 12 pages per minute, the PageLaser12 prints out a file more quickly than any other laser printer I've used. And, after seven months and 15,000 pages, the print quality of both text and graphics files is still dark and very good.

The PageLaser12 outputs the paper face down so that rearranging the sheets is not necessary. As for paper input, the printer comes with a 250-sheet tray for 8.5-by-11-inch paper that slides into the front of the machine. A tray for legal-size paper can be purchased as an option. Toshiba also offers an optional dual cassette sheet feeder (\$999) that holds two 250 sheet cassettes. This gives you a maximum of 750 sheets of paper. I have yet to experience a paper jam from any of these three cassettes.

The other options that Toshiba offers for the PageLaser12 are an output paper jogger (\$299), a memory expansion board (\$799) that increases memory from a standard 512K to 2MB, an envelope feeder (\$999), and font cartridges (\$149).

Overall, the Toshiba PageLaser12 is a very good laser printer. It is solidly built, works quickly, produces clean results, and has the Toshiba name and technical support network standing behind it. The only problem is the price: \$3,799. You have to pay for the extra speed and superior print quality.

—PASQUALE M. CIRULLO

Power tools

If children put as much energy into learning as they do playing, it would certainly speed up the learning process. Unfortunately, most don't.

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The reason is simple. Children look upon play and physical activities with interest and enthusiasm. While activities of the mind tend to be



perceived as being burdensome and boring.

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equal emphasis. And, they can create an environment in the home in which children develop positive attitudes about learning.

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Their potential.



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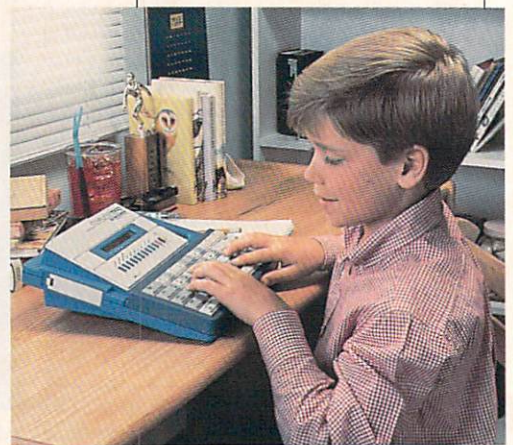
PreComputer 1000 is the perfect pre-teen computer. It's a 3-in-1 computer teacher that teaches touch typing, basic computer programming and has 4 levels of difficulty in history, geography, science and general knowledge; over 1000 questions that one or more players will find fun and challenging.

PreComputer 1000 tutors in BASIC program-

ming. It includes five math activities, has a built-in calculator with memory, as well as a 20 character dot matrix display screen.

Whether a 4th grader or an 8th grader, PreComputer 1000 will

stimulate an active mind and when your pre-teen has mastered the built-in challenges, you can expand the question and answer mode with cartridges on subjects like sports, bible, fantasy, entertainment and a 35,000 word dictionary.



In short, PreComputer 1000 is the perfect way for your pre-teen to plug into the future.

for children.

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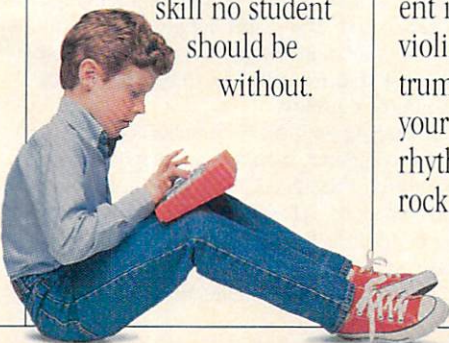
It may be fun, but it's not a toy. Type-Right is a self-contained typing tutor that can teach children how to use a typewriter, word processor or computer keyboard.

Step-by-step instructions take the student through a progressive series of typing lessons, from



basic finger positioning to typing complete letters.

Type-Right. It's the fun, easy way to learn the skill no student should be without.



Music Major.™ It puts a world of music at a child's fingertips. For ages 4 and up.

If you want to give your child the best possible introduction to the richness of music, you want Music Major.

Music Major acquaints your child with a variety of sounds. In fact, it can produce the sounds of 5 different instruments: piano, violin, organ, flute and trumpet. It also acquaints your child with different rhythms from rumba to rock.

Music Major has a 23 key keyboard as well as an LED display screen which helps familiarize your child with notes and their positions.

Best of all, when you give Music Major to a child, you introduce a pastime that can be enjoyed for a lifetime.

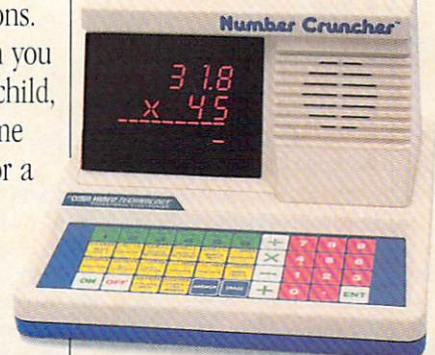
To turn up math skills, count on Number Cruncher.™ For ages 6 to 11.

Number Cruncher is the ultimate power tool for math.

All of the math functions and activities are for children in grades one thru six, and with the press of a button, the child can select the appropriate grade level.

Using Number Cruncher's computer-like keyboard, a youngster can practice adding, subtracting, dividing, multiplying, working fractions, doing decimals, even developing the ability to reason deductively.

If you want to help a student do better with math skills and have a lot of fun in the process, you can't do better than



Number Cruncher.

So if you want to turn up your children's skill level while putting them in touch with a wealth of information, bring home a set of power tools from Video Technology. They could be just the spark a growing mind needs.



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About Our Reviews and Ratings

Each month, HOME-OFFICE COMPUTING's Hardware Reviews take an in-depth look at new and worthwhile computers, peripherals, faxes, copiers, phones, and other hardware for the home office.

Our reviewers set up the equipment in their own home offices. After heavy use and extensive testing, they rank each item against the competition on the basis of suitability for the home-office environment and overall value, taking into account

- Performance
- Features
- Ease of Setup
- Ease of Learning and Use
- Documentation
- Size
- Expandability/Versatility
- Availability
- Durability
- Support
- Warranty
- Value for the Money

Then, the HOME-OFFICE COMPUTING Hardware Testing Lab conducts its own battery of tests (a printer speed test, for example) and verifies manufacturers' specifications. Finally, our technical editors combine the reviewers' rankings, the lab-test results, and their own experience and judgment into an overall rating on a scale of zero to four stars:

- | | | | |
|----|---------|------|-----------|
| ○ | Poor | ★★★ | Very Good |
| ★ | Average | ★★★★ | Excellent |
| ★★ | Good | | |

REVIEWED IN THIS ISSUE:

Computer: AST Premium Workstation/286 Model 243

Speed-up Card: Intel Inboard 386/PC

Video Card: Paradise VGA Plus

Monitor: NEC MultiSync II

Printer: IBM Proprinter II

Fax: Canon FaxPhone 20

Phone: Northwestern Bell EasyTouch

Answering Machine: Panasonic RC-TX91

Telephone Clock Radio with Answering System

Coming Next Month: The first HOME-OFFICE COMPUTING Mini Guide. We'll give you an overview of desktop-publishing monitors and review some of the latest we've seen.

Compact Two-Slot 286 Computer from AST

CIRCLE READER SERVICE 101

AST Premium Workstation/286 Model 243

AST Research, Inc., 2121 Alton Ave., Irvine, CA 92714; (714) 863-1333

RATING: ★ ★ ★

SUGGESTED RETAIL PRICE: \$3,795

MICROPROCESSOR: Intel 80286 (6 & 10 MHz); socket for 80287 (math coprocessor)

MEMORY: 1MB, expandable to 4MB on the motherboard

DISK DRIVES: 3.5-inch, 1.44MB floppy-disk drive and 40MB hard-disk drive with access speed of 28 milliseconds

PORTS: One parallel and two 9-pin serial

VIDEO ADAPTER: Enhanced EGA (on the motherboard)

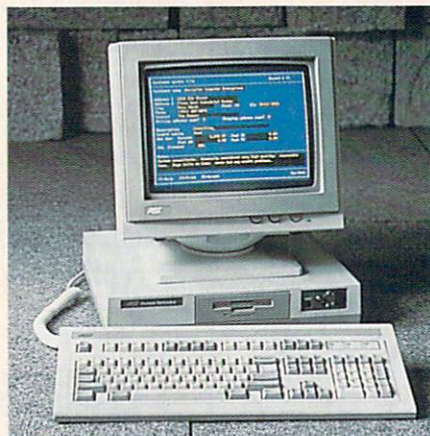
FREE EXPANSION SLOTS: Two AT-type (8/16-bit)

OTHER HARDWARE INCLUDED: Real-time clock/calendar

SOFTWARE INCLUDED: MS-DOS 3.3, GW-BASIC, diagnostics, utilities

DIMENSIONS: 14.8-by-16.04-by-3.4 inches

WARRANTY: One year



Until recently, California-based AST Research has been best known for its high-

quality add-in cards, including the top-selling SixPakPlus. Two years ago, the company became a computer manufacturer and is now selling three lines of computers: Premium/386, Premium/286, and Premium Workstation/286.

Any computer is a "workstation" because it's a place for working. However, the term is often used either for very high-powered computers dedicated to solving engineering problems or for stripped-down systems—often without a disk drive—either connected to other computers in an office network (LAN) or tied to a minicomputer or mainframe.

AST's Workstation/286 occupies a middle ground. One of the reasons it was designed was to provide computational power for a LAN user, but it can still stand on its own as an enhanced AT-type computer with limited expandability. Should you consider a Workstation/286 for your home office? Yes—if compact design is more important to you than future expansion.

Except for the color, the Workstation/286 bears a strong resemblance to the IBM PS/2 line of computers. It is not, however, a PS/2 clone. The two expansion slots, which are stacked horizontally because of the low-profile design of the system, accept only XT- and AT-type boards. The resemblance is strengthened by the central placement of the 3.5-inch (1.44MB) floppy-disk drive, without provision for a second drive. The 40MB hard-disk drive comes partitioned into a 32MB C: drive and an 8MB D: drive. For all practical purposes, you end up with three drives, which should normally prove more than adequate for those who don't need a 5.25-inch disk drive.

The computer packs a lot into a small space: two free slots, memory, ports, disk controllers, and EGA. A small front panel contains a lock, a reset button, and a lighted power switch. The power supply fan is audible, but not annoyingly so, and both the hard-disk and microfloppy (3.5-inch) drives are almost noiseless.

In keeping with AST's emphasis on quality, the computer, monitor, and keyboard are thoughtfully designed and well constructed. The enhanced AT (101-key) keyboard has just the right feel—there's nothing mushy or loose.

AST's matching monochrome monitor

LASER PRINTERS

NEC LC 890 \$3,095.00*
LC 800 Toner Cartridge \$10.35*

HEWLETT PACKARD

Laser Jet Series II \$1,584.99*
Laserjet Toner Cartridge \$91.11*



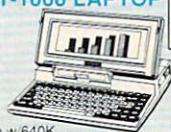
OKIDATA Laserline 6 \$1190.00*
Laserline 6 Toner Cartridge \$19.19*

LAPTOPS

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720 3.5" Drive

\$699.00*



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with a tilt-and-swivel base costs \$195 more. It produces a rock-solid image, sharp from corner to corner. The 14-inch (diagonal) CRT is matte finished to reduce glare and is almost flat.

Since the computer is complete right out of the box and factory configured, you need only connect the keyboard and the video and power cables. And, in addition to MS-DOS (Version 3.3), AST supplies a disk of menu-driven utilities for system configuration, memory management, a disk cache, RAM-disk designation, and print spooler.

If you really want to understand MS-DOS, you'll need to buy a "how-to" book—the one included just doesn't cut it. The AST User's Reference, on the other hand, is well illustrated and well written and shouldn't leave you puzzled.

Premium quality means premium price, although you can find the Workstation/286 discounted 30 to 35 percent. AST has made a "sweet machine"—quiet, reliable, and eminently useful. The same design ingenuity and level of manufacturing excellence that won AST Research its reputation have been carried over into the AST computer systems. Everything about this computer gives one confidence that it will do its job uncomplainingly for a long time to come.

—HENRY F. BEECHHOLD

Intel Board Makes Your PC Run 10 Times Faster

Intel Inboard 386/PC CIRCLE READER SERVICE 102
Intel Personal Computer Enhancement Operation,
Mail Stop CO3-07, 5200 N.E. Elam Young Park-
way, Hillsboro, OR 97124; (800) 538-3373

RATING: ★ ★ ★

SUGGESTED RETAIL PRICE: \$1,295

MICROPROCESSOR: Intel 80386 (16 MHz);
socket for 80387 (math coprocessor)

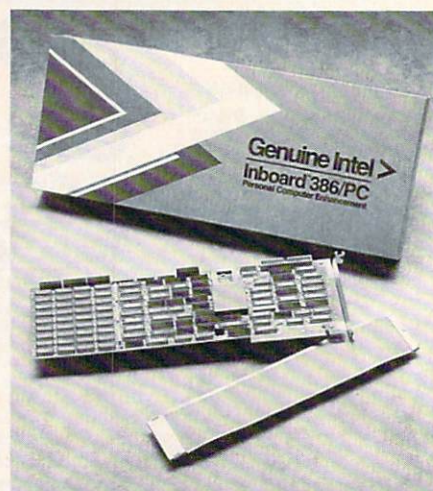
MEMORY: 1MB, expandable to 3MB using op-
tional 2MB piggyback memory board (\$1,495)

HARDWARE REQUIREMENTS: IBM PC or PC
XT, Compaq Portable or Portable Plus, or Tandy
1200 HD

DIMENSIONS: 13.3-by-4.2 inches

WARRANTY: Five years

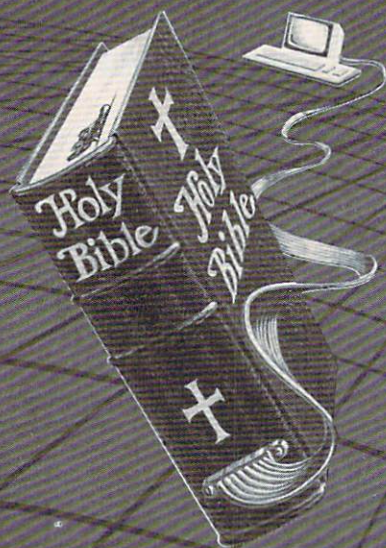
You've heard all the talk about the hot, new 80386-based computers. Suppose you're not ready to shell out over \$5,000 for one of these models, but aren't satisfied with the speed of your IBM PC. Now you can super-



charge its performance with an Intel Inboard 386/PC, which will give your system a 16MHz 80386 microprocessor that can run your programs up to 10 times faster.

The Inboard 386/PC is not a complete computer on a card. While it replaces both the existing memory and the original microprocessor, the rest of your existing system—keyboard, drives, ports, and so forth—remains the same. Thus, you can still use only PC-type expansion boards. Likewise, your screen and hard disk won't run any faster.

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CIRCLE READER SERVICE 16

The Inboard 386/PC's relatively simple installation procedure is clearly explained and illustrated in the manual. I started it up without a hitch, but HOME-OFFICE COMPUTING's assistant technical editor installed the board into a different PC and encountered problems that took hours to resolve. However, Intel provides outstanding customer service. A toll-free number puts you into an elaborate audio menu from which you make selections by pressing telephone keys. For a problem or question not answered by the recorded messages, you can talk to a live representative.

Once the board and accompanying software are correctly installed, every time you turn on your computer, it will automatically zip along at 386 speed. If one of your programs doesn't function correctly at the higher speed, you can always slow down operations on the fly via a "hot-key" combination.

Speed is what the Intel Inboard 386/PC is all about. There's a mighty big gap between 4.77MHz and 16MHz. In addition to the clock-speed increase, there's the speed advantage arising from the internal differences between the 8088 and the 80386 microprocessors. Some of the latest software—*Paradox 386*, for example—is explicitly designed to make use of the 80386's advanced features. So at relatively low cost, you can

shove your computer into the vanguard.

Intel guarantees only that the Inboard will run on a genuine IBM PC, PC XT, a Compaq Portable (or Portable Plus), and a Tandy 1200 HD. I've tested the board in three IBM clones but had success in only one. If you decide to take a chance, be sure to get written assurance from your dealer of your right to return the board at no penalty.

The 386/PC draws 21 watts of power. Intel warns that you may need to upgrade your power supply to handle it. A drop-in 135- to 150-watt replacement power supply runs less than \$100.

The quality of the Inboard 386/PC is outstanding. The five-year warranty underscores the point. After all, Intel is the company that brought us the 80386 chip itself, as well as the 8088 at the heart of your PC.

The 386/PC does exactly what it claims to do. A 3,600-cell Lotus 1-2-3 recalculation took 4 seconds instead of 23, and 3,200 dBASE III records indexed in 34 seconds instead of 209. Once you've computed at high speed, you may not be able to return to the slow, old-fashioned way. But are you willing to spend \$1,295 for the privilege? (Mail-order prices start at about \$650.) It certainly beats the phenomenal prices of the 80386 computers. I'm sorely tempted.

—HENRY F. BEECHOLD

Versatile VGA Card Has Seven Modes

CIRCLE READER SERVICE 103

Paradise VGA Plus Card

Paradise Systems, Inc., 99 South Hill Drive, Brisbane, CA 94005; (415) 468-6692

RATING: ★★ ★

SUGGESTED RETAIL PRICE: \$450

TYPE: VGA

VIDEO MODES SUPPORTED: MDA, HGC, CGA, EGA, VGA, 132-column, and 800-by-600-by-16 colors

HARDWARE REQUIREMENTS: IBM PC/XT/AT and compatibles; analog monitor

DIMENSIONS: 5-by-5.9 inches

WARRANTY: Three years

If you try to run a variety of software on your computer, you'll find many different display requirements. One package asks for standard CGA, a second expects Hercules graphics, a third outputs full-color VGA, and yet a fourth takes advantage of the low-end PS/2's MCGA modes. With the Paradise VGA Plus and an analog monitor, you have all bases covered.

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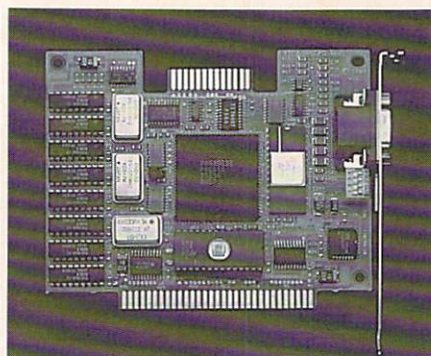
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You can also squeeze 132 columns of text onto the screen at once (handy for large spreadsheets) or work with 16 colors at an astounding 800-by-600 resolution. These extra-high-resolution modes, supported by multisynchronous monitors such as the NEC MultiSync II and Magnavox Multimode, require installation of the supplied Paradise software. The Paradise software manual steps you through installation of the most advantageous modes for Microsoft Windows/286, GEM, AutoCAD, Cadvance, Ventura Publisher, and Framework II. In addition, Paradise shows you how to run Wordstar and WordPerfect in the Paradise 132-column text mode.

Like all other VGA cards, the VGA Plus can display 256 colors at once from a palette of 262,144; but if you want all 256 colors, the resolution must be reduced to 320-by-200 lines. To compensate for this lowering of image quality, the Paradise VGA Plus card double scans (a process called interlacing) to give you the effect of 400 lines of vertical resolution.

The card is a snap to install: Just remove your existing video board and replace it with the Paradise VGA board. Once you've reset your computer's system-board DIP switches (if necessary), the board functions flawlessly.

I tested the board with two monitors: the Zenith ZVM-1490 and the Princeton Graphics Ultrasync. It works just as the Paradise manual says it will. The display is rock solid—no ripples or waves, no distortion beyond whatever may be inherent in the monitor itself. And Paradise is confident enough in the product to offer a three-year warranty, which includes a compatibility guarantee to the effect that the card must work in any computer that the IBM PS/2 Display Adapter works in or you'll get a compatible replacement or your money back.

The Paradise VGA Plus Card is being discounted in the \$250 range. While this is a far cry from a \$50 CGA or monochrome card, it gives you the current IBM video display standard. The only drawback to this card is its limitation to analog monitors. If this limitation doesn't matter to you, then by all means put Paradise high on your list.

—HENRY F. BEECHOLD

Flexibility for the Future

NEC MultiSync II Monitor

NEC Home Electronics (U.S.A.) Inc., 1255 Michael Drive, Wood Dale, IL 60191; (312) 860-9500

RATING: ★ ★ ★ ★

SUGGESTED RETAIL PRICE: \$950

SCREEN SIZE (DIAGONALLY): 14 inches

DOT PITCH: 0.31 millimeters

MAXIMUM RESOLUTION: 800 by 560

HARDWARE REQUIREMENTS: IBM PC/XT/AT and compatibles, with MDA, HGC, CGA, EGA, or VGA display card IBM PS/2 & compatibles, Apple Macintosh II (custom cable required)

OTHER HARDWARE INCLUDED: 9-pin-to-9-pin cable, 9-pin-to-15-pin adapter, built-in tilt/swivel base

DIMENSIONS: 14.5-by-14-by-16 inches

WARRANTY: Two years



With so many graphics cards on the market, who knows which one to buy? CGA, EGA, eEGA, MCGA, or VGA? And, to make things even more complicated, will our monitor handle the card we buy? No need to worry; the NEC MultiSync II automatically adjusts to work with any display card, from monochrome to VGA.

The MultiSync II looks a little larger than the original NEC MultiSync, but has the same 14-inch screen. Its added height makes it comfortable for viewing even when it rests directly on the desktop, and its base lets you twist and turn to reach the perfect viewing angle.

The MultiSync II's full complement of controls (vertical and horizontal size and position knobs, text switches, contrast, brightness, and power button) has been moved from their inconvenient spot on top of the original MultiSync to a front panel, where you can adjust them easily without leaving your seat.

Tired of squinting to read the glaring green

or aggravating amber text on your monitor? The MultiSync II's dot pitch of 0.31mm (millimeters) produces text (in EGA mode) that's clear and soft on the eyes no matter what color it is—amber, green, or paper-white. However, the text switch will not work in VGA mode.

The color on the NEC MultiSync II is beautiful. Microsoft Windows and Microsoft Excel look far better than they had on my Mitac monitor, and PC Paintbrush produces colors that are truly impressive. Every presentation is clear and crisp with an abundance of vivid colors.

Multiscanning monitors like the NEC MultiSync II are able to accept a wide range of signals, from monochrome to VGA. Most accept analog and digital input signals and automatically switch accordingly. They do cost about \$250 more than a standard EGA or VGA monitor, but for the money you get sharp text, fantastic colors, and great versatility. If you plan on sticking to a single monitor, you may or may not find the high resolution to be worth the money. But think twice before you reject the MultiSync II. Video standards are constantly improving, and if you ever decide to upgrade your system's graphics capabilities, you might save money by buying a monitor now that's flexible enough to meet your future needs as well.

—MARIE ALVICH

Serviceable Printer from IBM

IBM Proprinter II

CIRCLE READER SERVICE 105

IBM Corp., Old Orchard Road, Armonk, NY 10504; (800) IBM-2468

RATING: ★ ★ ★

SUGGESTED RETAIL PRICE: \$549

HARDWARE REQUIREMENTS: Computer with standard parallel port and cable

TYPE: 9-pin dot-matrix

DRAFT SPEED (PICA): 200 cps

NEAR-LETTER-QUALITY SPEED (PICA): 40 cps

GRAPHICS RESOLUTION: 240 by 144

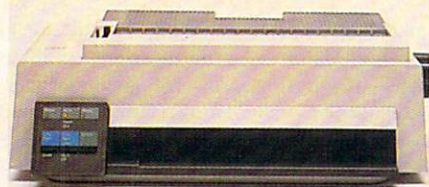
BUILT-IN EMULATION: None

PAPER WIDTH: Minimum 3 inches, maximum 11 inches

DIMENSIONS: 16.5-by-5.25-by-13.8 inches

WARRANTY: One year

The Proprinter II is a standard 9-pin dot-matrix printer capable of handling fanfold or sheet-fed paper up to 11 inches wide. Its printing modes include draft, NLQ (near-letter-quality), condensed, proportional, emphasized, double wide, double high, 12 characters per inch, underline, superscript, and subscript. However, there is no italic, an



enhancement available on a number of even very modestly priced dot-matrix printers. The print modes are selectable from the front-panel keypad.

Naturally, the Proprinter II is completely IBM compatible; it will print the entire IBM graphics set (characters, symbols, lines, and boxes). Furthermore, the printer supports low- and high-density All-Points-Addressable graphics. This means that, given the right software, it can reproduce just about anything that can be drawn on a computer screen, from business graphics to more complex artwork.

The printer is fairly compact and weighs only 18 pounds. It comes with only a parallel interface, but a serial interface is sold as an option (\$99).

The Proprinter II will start working for you as soon as you plug in the power cord and connect the parallel cable. After the printer is hooked up, you'll probably want to feed in fanfold paper, although you can also use the built-in sheet feeder if you're willing to insert one sheet at a time. It works well and offers the virtue of simplicity. But it's difficult to load fanfold paper neatly. Once the nasty job is done, though, the mechanism will give you no grief.

The Proprinter series is distinguished by its front slot for single sheets or envelopes. Once you've managed to load fanfold paper, there's no need to remove it if you want to print an occasional single sheet. Just feed the sheet or envelope through the slot. To return to fanfold printing, turn the printer off and carefully roll the paper forward.

The printer handled a variety of text and graphics printouts without incident. To see if it could take the heat, I printed out IRS forms (using income tax software) in NLQ mode so the printhead would have a lot of work to do. And, unsurprisingly, it got good and warm just as the manual said it would. Still, everything worked just fine from start to finish.

The IBM Proprinter II lists for \$549 (a little overpriced compared to other printers of its kind on the market), but can be bought at discount. It's a good choice as a general-purpose printer, especially for users of IBM and compatible computers. The big name counts for something in both quality and support. The ease with which you can feed single sheets somewhat compensates for the

awkward fanfold paper handling. There are plenty of print enhancements on board, though the lack of italics is inexcusable in this type of printer.

I would certainly consider the Proprinter II, but not before I had looked at several other brands. Every major brand has a comparable printer for the IBM PC/XT/AT and PS/2 lines. Many will give you more goodies per dollar than IBM does, but none will carry the magic name. —HENRY F. BEECHOLD

Canon's New Feature-Packed FaxPhone

Canon FaxPhone 20 CIRCLE READER SERVICE 106
Canon U.S.A., Inc., One Canon Plaza, Lake Success, NY 11042; (516) 488-6700

RATING: ★ ★ ★ ★

SUGGESTED RETAIL PRICE: \$1,995

COMPATIBILITY: Group 3; Group 2; North American 6-minute FM mode

DOCUMENT SIZE: Maximum width 8.5 inches, minimum width 5.9 inches

RECORDING PAPER SIZE: 8.5 inches by 98.4 feet (roll)

MODEM SPEED: 9600 baud (automatic fallback)

PRINTING METHOD: Thermal

DISPLAY: 20-character-by-2-line LCD

RESOLUTION: Fine mode: 203-by-196 dpi (horizontal-by-vertical); standard mode: 203-by-98 dpi

BROADCASTING: 3 pages to 16 stations

AUTOMATIC DOCUMENT FEEDER: 5 pages

ADDITIONAL FEATURES: Local copy function; automatic dialing (one-touch speed-dialing: 16 fax/16 telephone; coded speed-dialing: 10 fax/10 telephone), automatic redialing (twice), manual 10-key dialing, on-hook dialing, pulse/tone dialing switch; automatic receiving; talk reservation; hang-up alarm; hold button; speaker; RTI (Remote Terminal Identification), TTI (Transmitter Terminal Identification)

DIMENSIONS: 11-by-9.8-by-3.5 inches

WARRANTY: 90 days

Wrapped up in a package weighing under nine pounds and just slightly smaller than the new *Random House Dictionary*, the Canon FaxPhone 20 sports a telephone, a copier, and a facsimile machine with all the features you may ever need.

To start, just put the FaxPhone 20 on a small table or corner of a desk and plug it into a standard outlet and a modular telephone jack. Within minutes, you can be successfully transmitting and receiving facsimiles.

Operating the machine is simple. The documentation's exceptional graphics and concise, readable type clear the path for anyone who might otherwise be deterred by the large array of features incorporated into the FaxPhone 20—with one minor exception. It is



not until the last section of the booklet, under "Caring for Your Fax," that the instructions finally explain how to install the roll of paper that comes with the machine.

Learning some of the more esoteric fax functions, such as automatically sending documents to more than one location or through a relay unit, transmitting confidential text, and polling (requesting material from other units), is just as easy as learning basic operations. A small LCD lets the operator know what's happening at all times, and while at rest, it shows the date and time.

Image clarity on incoming documents is very good, although transmitted newspaper articles have a tendency to blur. Transmission time is fast in the Canon mode (from one Canon fax machine to another) at 17 seconds for a standard-size page.

The FaxPhone 20 can be used as a backup copier when you don't have immediate access to a copy machine. One potential drawback of the copier, which also goes for the fax, is the number of documents that can be copied or received at one time. The documentation warns that to protect itself from overheating, the machine may shut down for about 10 minutes after copying or receiving 40 letter-size documents. The shut-down limit was not reached in our testing—even after 45 copies—but if you plan consistent heavy use, it could be a problem.

At \$1,995 the Canon FaxPhone 20 is not the least expensive way into the fax machine market, but with its multitude of features and manageable size, it is ideal for many home offices. The added benefits of easy-to-use and clear, thorough documentation should influence the decision. —TIM HAZEN

No-Nonsense Bell Phone

CIRCLE READER SERVICE 107

Northwestern Bell EasyTouch Telephone

Northwestern Bell Telephone, 9394 West Dodge Road, Omaha, NE 68114; (800) 822-1000

RATING: ★ ★

SUGGESTED RETAIL PRICE: \$60

TYPE: One-line telephone (desktop or wall mount)
MEMORY: 10 phone numbers (maximum 16 digits each)

FEATURES: Hold button, redial button, ringer switch, tone/pulse dialing switch

DIMENSIONS: 9.25-by-4.5-by-2.25 inches

WARRANTY: Two years



Bell's EasyTouch Telephone is a good choice for that second phone line in your home office. It has some of the benefits of a business phone, but without all the complex electronic gadgets.

The EasyTouch is a basic single-line phone with a few of the most important features added. Auto-dial stores up to 10 numbers in its memory, allowing you to touch just one button instead of 7 or 11 to dial frequently-called or emergency numbers. A hold button is an indispensable feature if your telephone conversations often require you to leave the phone for short periods of time; it screens out household sounds as you check information or answer the door.

The EasyTouch supports both touch-tone and pulse dialing. It can even switch back and forth during telephone calls—required if you don't have touch-tone service but need to call one of those computerized services or long-distance carriers that respond to touch-tone sounds. Another important feature is the two-year warranty, a year longer than that of many other phones.

The EasyTouch retains many of the qualities of traditional home telephones: the uncluttered surface, the "no-nonsense" design, even the size and shape. However, it isn't capable of handling two phone lines, and it doesn't have all the features you'll need if you plan to use it as the primary phone in your office. It just won't do the trick.

But if you need a second phone for your home office, or you've outgrown your home phone, then the EasyTouch is the solution you're seeking.

—MARTIN BIHL

Panasonic Packs Five Machines Into One Advanced Answering Machine

CIRCLE READER
SERVICE 108

Panasonic RC-TX91 Telephone Clock Radio with Answering System

Panasonic Company, One Panasonic Way, Secaucus, NJ 07094; (201) 348-7000

RATING: ★ ★ ★ ★

SUGGESTED RETAIL PRICE: \$270

TYPE: One-line telephone with clock radio and answering system

MEMORY: 16 phone numbers (maximum 30 digits each)

FEATURES: Hold button, redial button, flash button, pause button, tone/pulse dialing switch, speakerphone, clock, radio, alarm

REMOTE: Answer mode on, reset, playback, fast forward, rewind, stop, outgoing message recording, outgoing message playback, security code change, message-transfer/message-call/timer-message-transfer setting

DIMENSIONS: 8.75-by-2.3-by-10 inches

WARRANTY: Two years



Panasonic outdid itself this time. Its RC-TX91 combines a feature phone, a speakerphone, an "intelligent" answering machine, and a clock radio! I've never seen a phone that does so much.

The RC-TX91 is packed with features for both home and home-office use. The phone has an autodial feature with a 16-number memory. The clock radio has a sleep/doze button, and its alarm can be set to sound with music, a buzzer, or both. The built-in speakerphone lets you use both hands to check through papers or pull up information on your computer screen as you talk, and its sound quality is so clear that it almost sounds as if you're talking through the handset. The RC-TX91 even has a timer that tells you how

long you've been on a call. This is not to mention features seen in most phones these days—the flash (useful for telephone services, such as call-waiting), redial, hold, and pause buttons, and the pulse/tone switch—as well as all the features of the answering system.

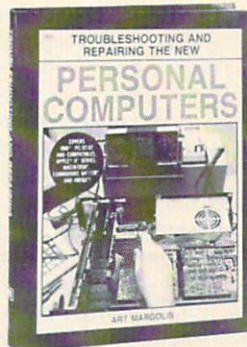
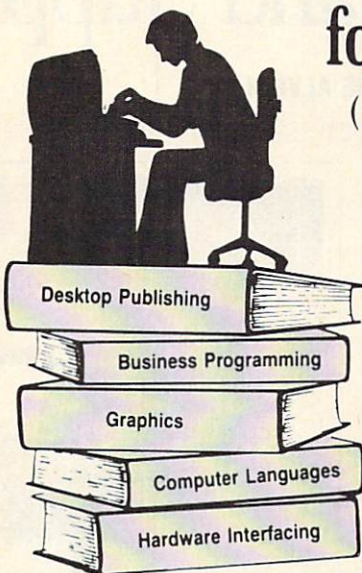
The Operating Instructions have a "Quick Setup" section that shows you how to have the RC-TX91 answering calls as soon as you take it out of the box. This gives you the chance to read the rest of the 50-page booklet, which is well illustrated, easy to read, well organized, and thorough. A handy little quick-reference card beneath the base of the phone slides out in case you need to refresh your memory.

While the features of the phone will make your life a little more pleasant and a lot easier, they don't compare to the built-in answering system, which is the most advanced and most useful I've come across. It uses two microcassettes—one for incoming messages and one for outgoing. An LCD displays the number of messages that are waiting, and every message is stamped with the date and time of the call. You can alternate among three different outgoing messages; you can also record phone conversations as well as memos and reminders to yourself. And when you're away from home, you can call from a touch-tone phone to control all the answering-machine features.

The advanced (and unusual) features of the answering machine include message transfer, timer message transfer, message call, and tone remote control. Message transfer (MT) automatically dials a preprogrammed phone number and immediately transfers an incoming message to the destination. You'll never miss a message again! Timer message transfer (TMT) works almost the same way—it receives incoming calls until the end of a preset time, and then relays them to the destination. Message call (MC) transfers a prerecorded message to a destination at a preprogrammed time. And tone remote control lets you listen to all your calls and prerecorded messages, or perform MT, MC, and TMT settings from a distant location. This feature-packed answering system really comes in handy if you have the time and patience to master it.

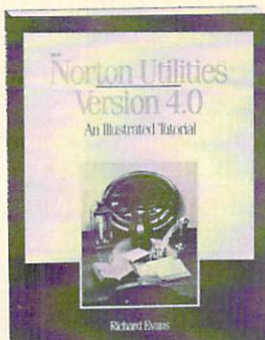
The RC-TX91's only drawback is that it handles only one telephone line. The people at Panasonic thought of almost everything else to include in this feature-laden system. For \$270 (available at discount for about \$199), you can exchange a clock, a radio, a speakerphone, an answering machine, and your old phone for this state-of-the-art system. How many telephone answering machines do you know of that can send as well as take messages? —MARIE ALVICH ■

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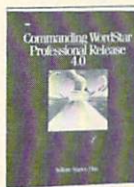
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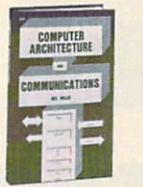
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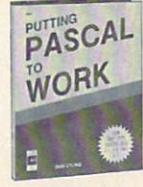
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BY MARIE ALVICH

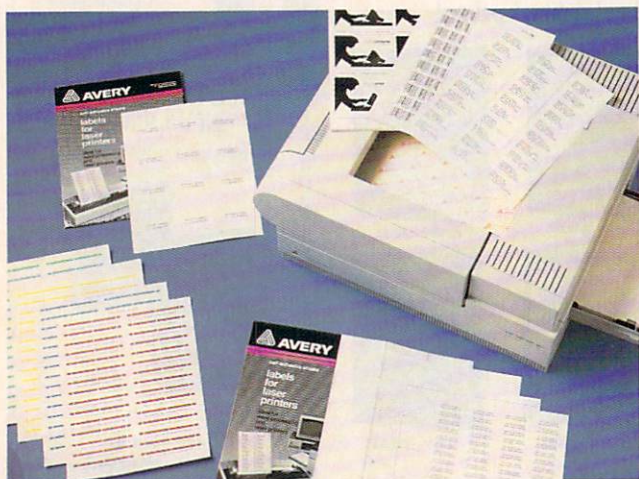
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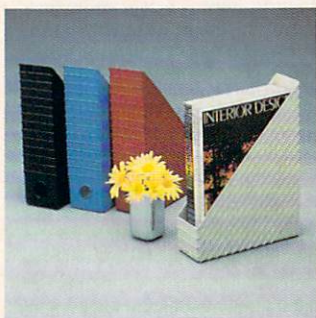
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MARIE ALVICH is associate technical editor for HOME-OFFICE COMPUTING.

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TELE RECEPTIONIST: "WHO IS CALLING?"

Caller: John Smith of XYZ Distribution

TELE RECEPTIONIST: "JUST A SECOND LET ME CONNECT YOU"

(By pressing the "RING" key, you simulate the sound of a call being transferred to an extension)

TELE RECEPTIONIST: "I'M SORRY, HE ISN'T IN, MAY I TAKE A MESSAGE?"

Caller: When do you expect him?

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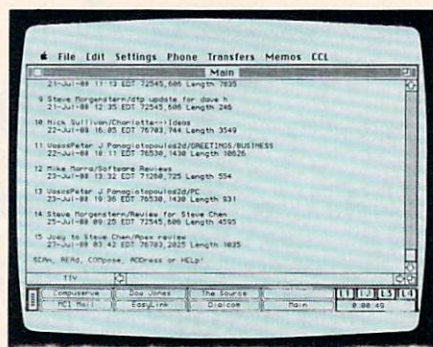
Five Productivity Workhorses

Two Databases (One With Graphics), Two Communications Programs, and the Latest Version of SideKick

Our reviews of applications software use shorthand to describe several of the details associated with any package. This is particularly true under "System Requirements"—where the minimum system configuration is noted—so we have provided the following table of computers for you to refer to as needed. Hardware, software, and memory are required unless noted as "recommended" or "optional." When more than one computer is listed under "System Requirements," the machine marked with an asterisk (*) is the type on which the software was reviewed. Requirements are *not* listed where obvious (for instance, printers with word processors or modems with communications programs). Operating system requirements, such as MS-DOS or the Macintosh System file, are listed only when they're not the standard, minimum requirement (DOS 2.0 for IBM PC or compatibles, System 3.2 for the Macintosh, or ProDOS for the Apple II). For those computer systems that can use both 5.25- and 3.5-inch disks (IBM PC and PS/2 or the Apple II), we've listed only those disk sizes that are either supplied with the software or available at no extra cost from the publisher. Since most productivity software is not copy protected, we have indicated—with the letters "CP"—only those programs that are copy protected. The version listed is the version reviewed; publishers may release subsequent versions at any time.

Designation	Models
128K Apple	IIe/IIc/IIgs (in IIc/c mode) and compatibles
128Ke Apple	IIe (enhanced ROM)/IIc/IIgs(in IIc/c mode)
Apple IIgs	IIgs only
IBM PC, PS/2	PC/XT/AT, PS/2 and compatibles
128K Macintosh	128K/512K/512Ke/Plus/SE/II
512K Macintosh	512K/512Ke/Plus/SE/II
512Ke Macintosh	512Ke/Plus/SE/II
1MB Macintosh	Plus/SE/II

Ratings Key: ○ Poor; ★ Average; ★★ Good; ★★★ Very Good; ★★★★ Excellent



The function "keys" displayed along the bottom of inTalk's screen save time by storing any regularly used text or command.

inTalk

VERSION REVIEWED: 3.0

SYSTEM REQUIREMENTS: 640K IBM PC or PS/2; 80286 or 80386 microprocessor; CGA, EGA, VGA, or Hercules; Microsoft Windows; mouse optional; 5.25-inch or 3.5-inch; 512K Macintosh*.

PUBLISHER: Palantir Software, 12777 Jones Road, #100, Houston, TX 77070; (713) 955-8880

PRICE: \$195

OVERALL PERFORMANCE: ★★★★★

DOCUMENTATION: ★★★

ERROR-HANDLING: ★★★★★

EASE OF USE: ★★

SUPPORT: ★★★

This is a full-featured telecommunications program, with enough bells and whistles to frighten off the faint of heart. And I don't want you to be frightened off, because I think inTalk is a very strong choice for filling your long-term communications needs. So let's start out with the assumption that you know nothing about communications software and never read manuals. You have a Mac, a modem, and the inTalk program disk. You want to log on to a national service, such as CompuServe.

You open the inTalk folder and there's a button labeled "Double-Click Me." Like Alice in Wonderland, you do as you're told. A dialog box appears on-screen inviting you to click on a button labeled "Setup/Help" to prepare for communications. Okay. Another

dialog box appears with an array of choices and a "Help" button if you need it. Click on "Remote Services" and you get another dialog box listing most of the usual suspects—CompuServe, MCI Mail, Easylink, The Source, Dialcom, and Dow Jones. Click on CompuServe and more dialog boxes appear, asking for the phone number, your user ID, and your password. When you're finished, you just click on a button labeled CompuServe. The computer dials the number and logs you on automatically. You're in, and you haven't even opened the manual.

What you've just experienced is actually a prime example of one of inTalk's most powerful features. The "Double-Click Me" sequence is an automated procedure written with inTalk's extensive command language. This language lets you create automated procedures, as simple or as complex as you need, complete with interconnected dialog boxes and icons. The program comes with several useful scripts—such as "Double-Click Me"—ready to run. And if and when you decide to take a stab at creating your own automated procedures, you'll find it's about as difficult as writing programs in BASIC.

Another prominent feature of inTalk is a set of function "keys" displayed along the bottom of the screen that you click on to activate. Eight keys appear at a time, and you can toggle between four sets for a total of 32. Each key can contain a set of characters or commands you use regularly, anything from sending your password to invoking a command-language script. Programming the keys is easy after a quick trip to the manual, and many commonly used commands are already set up in the sample files included with the program.

File transfer protocols supported run the gamut from standard MacBinary, XModem and straight ASCII text to Crosstalk (for communicating with MS-DOS computers), YTerm (for IBM mainframes and DEC VAX computers), and inTalk's own protocol for using high-speed error-correcting modems with peak efficiency. This is also the only Mac telecommunications program I've seen that supports CompuServe's new version of the VIDTEX format for graphics display.

Even beginners will appreciate many of the convenience features incorporated in inTalk, such as the on-screen timer and the ability to append incoming text to an existing

file. Once you learn to write command scripts, you'll be able to entirely automate your on-line communications, including setting the timer for unattended file transfers when phone and connect-time rates are low.

The program comes with two manuals, one covering the basics of on-line communications with *inTalk*, the other devoted to the communications command language. Both include welcome step-by-step tutorials along with handy reference material. The examples included in the command-language manual and the sample disk files are particularly valuable.

If you're sure you'll never need advanced telecommunications capabilities, the power and price of *inTalk* may be more than you need. For those who work in settings where connecting to a variety of computers is important, though, and for those who enjoy customizing their systems to carry out smoothly and automatically their own specific tasks, the reading and experimentation required to master *inTalk* is time well spent.

—STEVE MORGENSTERN

Opus I

VERSION REVIEWED: 2.0

SYSTEM REQUIREMENTS: 512K IBM PC or PS/2; two drives (hard-disk drive recommended); CGA, EGA, VGA, or Hercules; mouse recommended; 5.25-inch

PUBLISHER: Roykore Software Inc., 749 Brunswick St., San Francisco, CA 94112; (415) 333-7833; (800) 227-0847

PRICE: \$395

OVERALL PERFORMANCE: ★★★★★

DOCUMENTATION: ★★★★★

ERROR-HANDLING: ★★

EASE OF USE: ★★

SUPPORT: ★★



By enabling links among graphic information, words, and numbers, Opus I helps you create unique, interactive databases.

there's software that lets you create these kinds of graphic databases without needing to learn programming skills. That software is *Opus I*. It's described as a hyperdrawing program, but I think a combination drawing/database program is a better description. *Opus I*—which works under Microsoft Windows 2.0—includes sophisticated drawing functions so that you can create your own graphics. You can also use Windows's clipboard to import graphics from other programs.

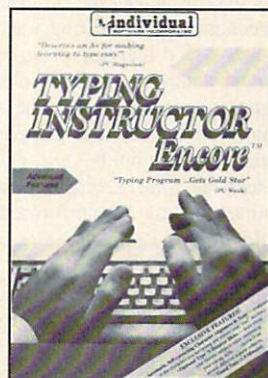
You work with a drawing that may be up to 16.5 inches square, using straight, jointed, curved, or freehand lines, as well as rectangles, polygons, rounded rectangles, and ellipses. Optional rulers and an adjustable grid system help you place objects on the page. You can also select graphic objects to rotate, stretch, move, or duplicate. The program includes eight levels of zoom, six in for detail, and two out for overviews of the whole drawing.

You can associate text, numbers, or a new set of graphics with any part of the original drawing. After you have finished your graphic—whether map, floor plan, seating arrangement, or human body—you can set up *Opus I* so that when a particular object or part of the drawing is selected, information about the selection or a new drawing is displayed. You determine what is displayed through a link to the database part of the program.

Opus I's database provides more than just links for the drawings. Each file may contain up to 10,000 records with up to 100 fields per record and up to 1,023 characters per field. Each record holds all of the information (text, numbers, formulas, and graphics) associated with a particular item in the file. Each record can be linked to an object in the drawing, but that is not required. The database includes search and selection functions, which may be used to locate all records that meet particular criteria. The unique feature of *Opus I* is that this information may also be displayed on the drawing, so that graphics assigned to the selected records may be highlighted or hidden from view.

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Imagine a computer picture of a housing development that showed every house. Now imagine that when you select one of those houses, the computer indicates if the house has been sold, reveals how many bedrooms and bathrooms it has, tells you its sale price, and shows you a floor plan. Suppose you could also get a printed report—as a listing or a map—showing all the houses available in the development, which houses are sold, and the total sales. Now instead of housing, imagine a map of the United States. When you select any state, you see a large map of that state showing all of the airports, or all of the parks, or all of the cities with more than 1,000,000 people. If you select one of these airports or parks or cities, imagine accessing a new map that shows buildings or perhaps campsites, and if you select one of them, you obtain pertinent facts about it.

Now stop imagining things, because

Once you have finished creating your drawing and database, you can lock the drawing or the entire file. This allows others to review the data but not alter the information. This feature makes the program an excellent mechanism for creating files that are part of a self-paced learning program.

Like most database systems, *Opus I* has report-generating capabilities. These reports may contain any fields that are part of the record except picture fields. Arithmetic operations—such as total, average, maximum, and minimum—may be performed on numeric fields. *Opus I* also includes a built-in mailing-label program for use with your database. For instance, you could print mailing labels for all of the people in your database with addresses in a certain state by pointing to the state and then saying you want to do mailing labels. In addition to printing conventional reports, you can also print drawings. This, in conjunction with the selection feature of the database, may be used to print a visual display of all records that meet certain selection criteria. To use the earlier example, you could print a map of the housing development showing only those houses that were still on the market and had three bedrooms.

By allowing you to link graphic information with words and numbers, *Opus I* offers noteworthy strengths. The excellent graphics

functions and the ability to assign information to portions of a drawing are unique to the MS-DOS world. Obviously, it takes additional time to create the drawings, but in many instances the additional dimension is worth the extra time. If you have an information-handling task that can be better expressed with pictures than words, then I strongly recommend you consider *Opus I*. Its potential applications are limited only by your own imagination. —BROOKS H. HUNT

ProComm Plus

VERSION REVIEWED: 1.1a

SYSTEM REQUIREMENTS: 192K IBM PC or PS/2; two drives optional; 5.25-inch or 3.5-inch

PUBLISHER: Datastorm Technologies Inc., 1621 Towne Drive, Suite G, Columbia, MO 65202; (314) 474-8461

PRICE: \$75

OVERALL PERFORMANCE: ★ ★ ★ ★

DOCUMENTATION: ★ ★ ★

ERROR-HANDLING: ★ ★ ★

EASE OF USE: ★ ★ ★ ★

SUPPORT: ★ ★

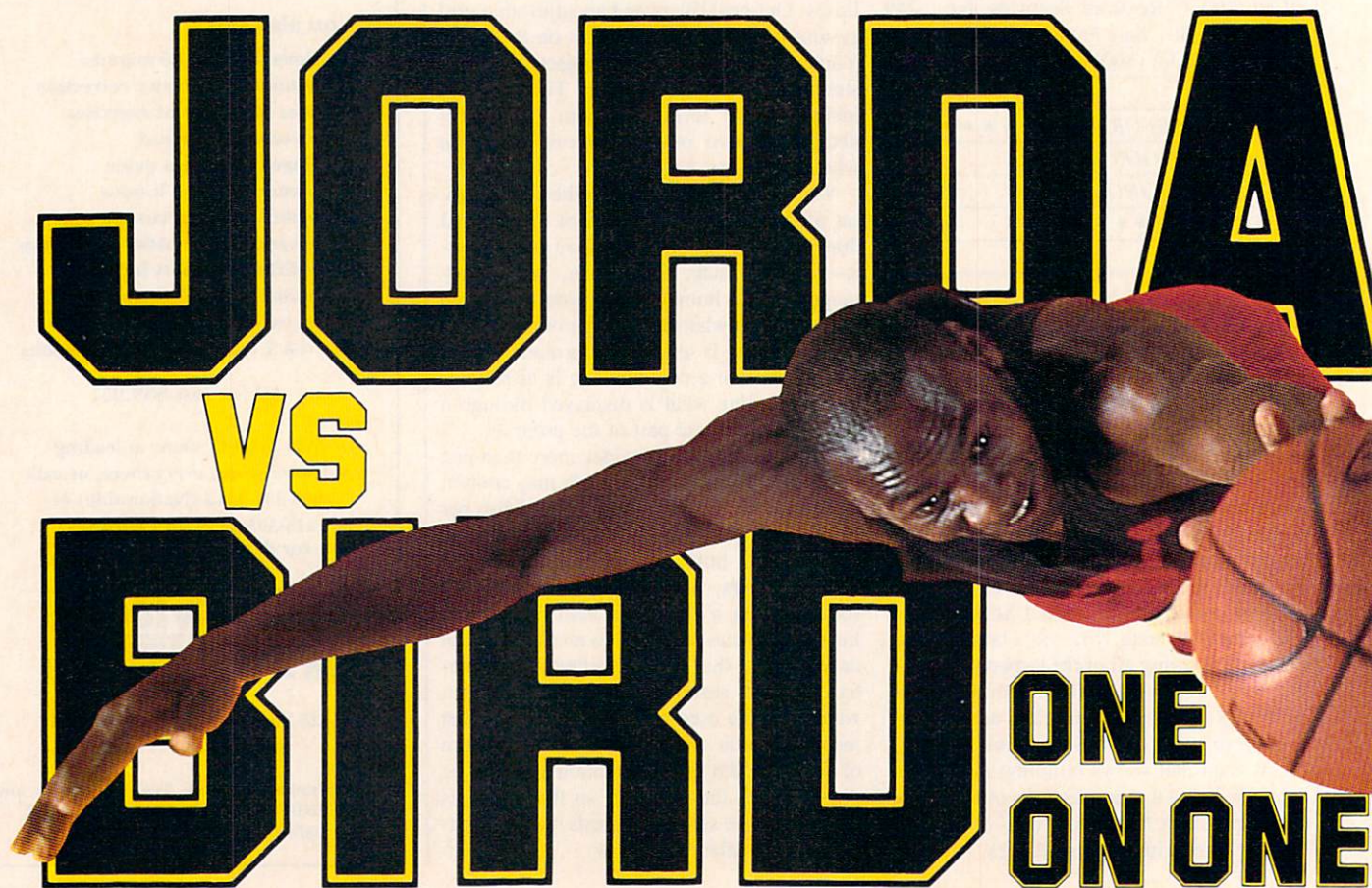
I first encountered the *ProComm* shareware communications program about a year ago

when I saw a colleague using it. I liked it, so I downloaded my own copy from a bulletin board. The more I used it, the more I liked it. It wasn't perfect, but it did what I asked quickly and easily, and I appreciated the user interface with its pop-up windows.

Some of the problems I had with *ProComm* v2.4.2 were its lack of a record mode to automate procedures, its missing text editor (even though there was a facility to add your own), and its error handling in Host mode. Some of my friends didn't like *ProComm* because there wasn't a menu system.

ProComm Plus, the first commercial offering of the same program, has addressed these complaints. First, they added a menu system along with the command system—press one key and a Lotus 1-2-3-style menu appears at the top of the screen. You choose an item by either pressing the first letter of the command or by using the arrow keys to move through them. As you go through the menus with the arrow keys, a brief description of the choices and the command equivalent appear on the next line. Once you reach the proper menu item, press ENTER and the command is executed. If you like to use menus, this system is well implemented. And you wind up learning the commands as you go.

The command system is roughly the same as in *ProComm* v2.4.2 with a few excep-



tions. There are also some new commands, such as one that lets you simultaneously run a second program (such as your word processor) without quitting *ProComm Plus*. Your only limitation is that the computer must have enough memory for *ProComm Plus* and the other program (this shouldn't be a problem if your machine has 640K and the other program isn't a memory hog). For example, I was able to run *XyWrite III* and *ProComm Plus* without running into trouble.

The developer also added a record function. Now you no longer have to write a script to log you onto a bulletin board. Just dial the number, turn on the record mode, and log onto the bulletin board. When you are finished, turn off the record mode and, voilà, you have a log-on script ready to replay for subsequent sessions.

If you enjoy writing communications scripts, you'll love the new Aspect script language in *ProComm Plus*. This language is more advanced and powerful than the one included in the shareware *ProComm*, but I had no problem using it. With Aspect, I was able to write various scripts that browsed around CompuServe looking for particular files and downloading them. All this browsing and downloading occurred while I was asleep, and *ProComm Plus* always downloaded what I wanted the first time out.

One of my earlier complaints, error han-



ProComm Plus's detailed help screens at every level encourage novice users and remind experts of little-used commands.

dling, was effectively altered. With the former *ProComm*, every time I tried to transfer a large file (over 100K) to a computer running *ProComm* in Host mode, the program would give me an error in the middle of the transfer and then lock up the machine. *ProComm Plus* made the transfer without a hitch. A colleague on the other coast transferred three 400K binary files to me overnight without trouble. The only error he encountered was when he tried to transfer the fourth file and there was no room on my hard drive to store it. The program gave him an error message and aborted the transfer, but didn't lock up my computer.

One other change made to Host mode is the ability to restrict callers to only certain directories on a hard drive. This makes it possible to run a bulletin board using *ProComm Plus*.

Add to the above-mentioned improvements a list of little goodies such as a text editor, increased number of terminal emulations, increased number of file transfer protocols, and a listing of bulletin board telephone numbers across the country, and you have one terrific communications program.

The easy-to-read manual is divided into three main sections: Learning *ProComm Plus*, *ProComm Plus Basics*, and *ProComm Plus Advanced Features*. The first section takes you through the steps of calling another computer, downloading a file, and using the macro facility and record function. It is written in a clear style that walks you through the necessary steps. Then comes a reference section that shows you how to customize *ProComm Plus* to your preferences. The final section, *Advanced Features*, discusses Host mode, script files, and the Aspect script language. The index is complete and will point you to the right page for the answers to your questions.

Overall, I enjoyed using *ProComm Plus* very much and would highly recommend it to anyone, beginner to expert, who needs a communications program. As for me, I have

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SOFTWARE REVIEWS

erased the shareware *ProComm* from my hard drive and am using *ProComm Plus* exclusively. —PASQUALE M. CIRULLO

Q&A

VERSION REVIEWED: 3.0

SYSTEM REQUIREMENTS: 512K IBM PC or PS/2; two drives (hard-disk drive recommended); 5.25-inch and 3.5-inch

PUBLISHER: Symantec Corp., 10201 Torre Ave., Cupertino, CA 95014; (408) 253-9600

PRICE: \$349

OVERALL PERFORMANCE: ★★★★★

DOCUMENTATION: ★★★

ERROR-HANDLING: ★★★★★

EASE OF USE: ★★★

SUPPORT: ★★★

There are at least a dozen first-rate database programs on the market, each with its own claims on your pocketbook and computer. Any one would probably serve you well. *Q&A*, however, is not merely another out-sized workhorse (although it comes on six 5.25-inch floppies and needs a minimum of 512K of RAM). Rather, it is a cleverly designed flat-file manager and word processor integrated into a relatively easy system from which you can extract any database information you wish using the Intelligent Assistant, an interactive subprogram with which you confer in plain English. I say "relatively easy" because the *Q&A* menu and on-line help systems will guide you through all the basics without recourse to the hefty manual; but if you want to take advantage of the full power of the program, you'll have to invest time in study and practice. Don't let this worry you, however, for your first-level experiences with *Q&A* will be pleasant and will prepare you for more advanced applications.

Perhaps the most unusual of *Q&A*'s many features is the Intelligent Assistant (henceforth, IA). The IA system comes with a basic vocabulary as well as automatic knowledge of the vocabulary of the file under query. And since it is "intelligent," you can teach it whatever words are convenient for your particular needs. A typical query: "Show me Harry's June sales, returns, and commission." Any of *Q&A*'s large complement of relational operators can be used in these queries, and you can even modify files and define reports. You can sort on up to 50 fields ("Sort A where B is greater than C but less than D," for instance).

Just one example of the IA's cleverness is its ability to figure out comparative and superlative forms for the adjectives you teach it. So you teach it "tall" and it automatically knows about "taller" and "tallest." It's grammatical, too, so "expensive" will not be rendered in comparative and superlative



Q&A's excellent integration between database and word processor is a boon for those who need to do mail merge.

as "expensiver" and "expensivest," but as "more expensive" and "most expensive." You can, therefore, teach IA the word "old," and then query, "How old is Sam Doleful?" Or "Which employees are older than Sam Doleful?" Or "Who is the oldest member of the advertising department?"

You can ask the IA to do virtually any kind of numerical calculation, display predefined reports (a client list or work schedules, for example), define new reports, create new forms, change or delete individual records or groups of forms, and practically anything else you might ordinarily demand of a database. In fact, once you've set up the database, it's possible to "speak" to it exclusively through the IA. But as you become more comfortable with *Q&A*'s terminology, you'll probably rely less on the IA, preferring to deal directly with the data, thus saving time and memory space.

Q&A is a flat-file system, meaning that you can open only one file at a time. Hence, *Q&A* cannot be considered a full-blown relational database of the *dBase III Plus* type. This, however, is not a limitation for most small businesses. After all, *Q&A* provides for up to 16,000,000 records (256MB) per file with as many as 2,400 fields per record! A form—let's say a client record—can be up to 10 screens long. That adds up to a lot of information. In addition, you can approximate relational power using *Q&A*'s lookup function to link two or more files.

The *Q&A* database can accept *dBase II/III*, *Lotus 1-2-3*, *Symphony*, *PFS:File*, *IBM Filing Assistant*, *DIF*, and *ASCII* files. This feature allows you to integrate *Q&A* easily into a business environment already committed to other software.

Beyond true multifile relational access, there is little that can be done by other databases that cannot be done by *Q&A*. And there are few databases as adaptable to a user's needs. The programming language is essentially the same as those in common use among the major databases. For example, to calculate the future value of an annuity: @FV(p,i,l). The variables (payment, inter-

est, and life) may be fields, expressions, or numbers. With the macro function, you can write elaborate scripts executable via a single keystroke.

Q&A calls its word processor Write, a name that suggests a direct, uncluttered approach to writing. And Write certainly is that. I'm writing this review using Write, which took me no more than a few minutes to learn well enough for this task. Admittedly, I've had more than a little experience with word-processing software, but Write must be one of the easiest of all to master.

Write uses a combination of pop-up menus and predefined function keys. There's little to say other than to praise it for simplicity, speed, and inclusion of enough features to complete most writing jobs without a hitch. The search function is extensive, with commands allowing you to search for even such textual elements as print enhancements (for instance, "@it" means "search for text set in italics"). Among the commands you can include in a document are those for print queuing, spreadsheet and graph inclusion, and PostScript programming. And Write will not only import WordStar files, but you can use most of the WordStar command keys while working on a Write document. A single document can be 80 pages long and 250 characters wide. Headers and footers are definable up to a total of 18 lines of text. All the common print enhancements (such as bold or italic) are available. If you're using a laser printer, you can address up to nine fonts within a single document.

There's all this and an expandable, fairly high-speed spelling checker, too. You can spell check an entire document or just the word at the cursor. I have to confess, I'm hooked on Write, and find myself using it more and my old reliable less.

Like any of the big multifunctional applications programs, Q&A is many layers deep and defies adequate description in a short (or even a long) review. It does not integrate the variety of functions that you'll have in, say, Works or Symphony. But if you're already using 1-2-3, there's no need to switch spreadsheets. In any event, Q&A must be considered one of the best values around. Most users will probably not take advantage of more than a fraction of Q&A's capabilities, yet the fact that they're built in and awaiting your pleasure may tempt you to develop more sophisticated data-handling procedures.

—HENRY BEECHHOLD

SideKick Plus

VERSION REVIEWED: 1.0

SYSTEM REQUIREMENTS: 384K IBM PC or PS/2; hard-disk drive; modem (for dialing and data communications); 5.25-inch and 3.5-inch

PUBLISHER: Borland International, 1800

Green Hills Rd., Scotts Valley, CA 95066; (408) 438-8400

PRICE: \$200

OVERALL PERFORMANCE: ★★★★★

DOCUMENTATION: ★★★★★

ERROR-HANDLING: ★★★★★

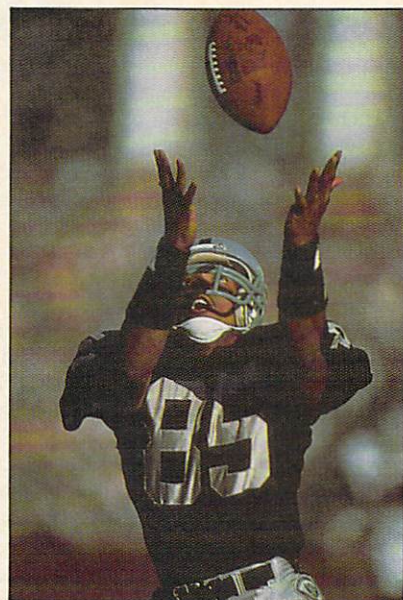
EASE OF USE: ★★★★★

SUPPORT: ★★★★★

You could spend a large part of your computing life working with *SideKick Plus*, the updated version of the classic "desktop manager." Behind the familiar boot-up menu are nine notepads handling up to 10,000 words each; nine outliners with table of contents, automatic numbering, and tree charts; a complete telecommunications facility; a time planner with calendar, appointment book, schedule window, and "tickler" alarms; a DOS file manager; four calculators: business, scientific, programmer, and formula; a copy-and-paste "clipboard" for integrating *SideKick* and other files; and an active ASCII table, that is, one that allows cutting and pasting.

Borland pioneered the memory-resident pop-up menu desktop organizer. In *SideKick Plus*, the concept seems to have been brought to its ultimate realization. It's difficult to imagine what could possibly be added to the program without turning it into a *Symphony* or one of the other behemoths of integration. Consider the calculator—just one example of *SideKick*'s "bottomless-pit" approach. Selecting "Calculator" from the main menu puts the calculator frame on-screen and offers you enough options, through function-key and sub-menu selections, to fill 70 pages of explanatory text in the manual. The likelihood of your running into a numerical calculation you cannot perform with one of *SideKick*'s four calculators is mighty slim. Everything can be displayed on a screen "tape," incorporated into a *SideKick* or other document, or printed out directly.

The initial installation program will, at your option, install *SideKick Plus* to load automatically every time you boot up. Once loaded, you activate it by pressing the "hot keys" (CTRL-ALT, or you can change them to suit yourself). From the pop-up main menu you make your selection by moving the highlight bar, or by entering the first letter of desired subprogram, or by using a function-key "shortcut" (*SideKick*'s term). The shortcut key combination for a given selection is always displayed at the bottom of the screen, along with other prompts and choices. Backing out of any menu at any level is accomplished by pressing ESCape. Most of the workspaces—the calculator "tape," for instance—can be both moved around just as you would move pieces of paper on your desk and resized. Both fea-



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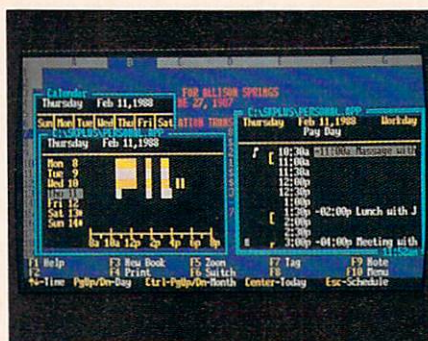
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tures are useful when you have several *SideKick* screens displayed simultaneously.

There is so much to do in *SideKick Plus* that one is tempted to play. Menus lead to menus lead to menus. At every level there are help screens. Hundreds of discrete functions can be performed with the program. In various combinations, these functions add up to something approximating infinity. For example, should *SideKick Plus* as it comes out of the box not quite suit you, the supplied customizing program lets you modify menus and screens, function-key assignments, print features, text formats, and module access (adding or deleting libraries of modules).

Although memory-resident software can misbehave—especially when two or more programs are in concurrent use—*SideKick Plus* seems well mannered, a testimony to



SideKick—the pioneer memory-resident, pop-up menu desktop organizer—has been brought to its ultimate realization in SideKick Plus. You could spend a large part of your computing life using the time planner with calendar, appointment book, schedule window, and "tickler" alarms.

Borland's experience in designing this type of software. You can buy cheaper, but I doubt whether you can buy better in terms of programming sophistication. Of course, there's always the chance that *SideKick* will not live comfortably with certain other programs.

On a dollar-per-function basis—even at the full list price of \$200—*SideKick Plus* is a spectacular bargain. Be forewarned, however, that full mastery of *SideKick Plus* will take some effort. Be warned, too, that the program is beguiling—even addictive—and you may find yourself spending a lot of time just fooling around with it instead of doing your regular work and calling on *SideKick Plus* only for the occasional assistance that constitutes its ostensible purpose in your computing life. —HENRY BEECHHOLD

SOFTWARE QUICK TAKES

TITLE/PUBLISHER PRICE/VERSION	SUMMARY	SYSTEM REQUIREMENTS	RATINGS				
			O	D	EH	EU	S
Comment Deneba Software 7855 N.W. 12th St., #202 Miami, FL 33126 (305) 594-6965 \$100 v2.0	Large desk accessory (90K) for creating pop-up notes with graphics that you "stick" to words, spreadsheet cells, or windows in any document. Operates improperly sometimes, such as not sticking to Micro-soft <i>Works</i> ' spreadsheet cells. —Ron Mansfield	512K Macintosh. Two drives recommended.	★	★	★	★	★
Graph-in-the-Box New England Software Greenwich Office Park 3 Greenwich, CT 06831 (203) 625-0062 \$140 v2.0	Do you want a better business graph than your spreadsheet can produce? Consider memory-resident <i>Graph-in-the-Box</i> to make 11 types of charts—or combine two to six types, such as bar and line graphs. Shares files with <i>PageMaker</i> . Menus make it easy to use. —Brooks Hunt	128K IBM PC or PS/2. CGA, EGA, VGA, or MCGA, or Hercules. 5.25 inch and 3.5 inch.	★	★	★	★	★
MacPaint Claris Corporation 440 Clyde Ave. Mountain View, CA 94043 (415) 960-1500 \$125 v2.0	Modernizes a classic with tear-off, icon Tools menu (like <i>HyperCard</i>); multiple windows (up to nine, depending on memory); and a superior "fat-bits" mode. Much improved, but is it a good value when compared to <i>SuperPaint</i> for instance? —Roger Hart	512Ke Macintosh. Two drives recommended.	★	★	★	★	★
PC-Calc + ButtonWare, Inc. P.O. Box 96058 Bellevue, WA 98009 (206) 454-0479 \$70 v1.0	Several good features in this spreadsheet, such as producing graphs in one of five types directly from the worksheet data. But if you're used to 1-2-3 or compatibles, the commands are entirely different, and the number of rows is limited. —Anthony Guardino	384K IBM PC or PS/2. Two drives. CGA, EGA, VGA, or Hercules (for graphing). 5.25 inch and 3.5 inch.	★	★	★	★	★
Quicken Intuit 540 University Ave. Palo Alto, CA 94301 (415) 322-0573 \$50 v1.0	Functions as a check register with a memory. Transactions can be sorted and totalled by payee, category, date, or any distinguishing factor you include. Can share data with <i>Excel</i> . Prints non-standard checks, but order form comes in package. —Charles H. Gajeway	128K Apple, 256K IBM PC or PS/2, 512K Macintosh*. Two drives recommended. Printer.	★	★	★	★	★
II Write Random House Media 400 Hahn Rd. Westminster, MD 21157 (301) 848-1900 \$60 v1.5	What you see may be what you get in this Macintosh-style word processor with pull-down menus, but getting there can be cumbersome, particularly with long files. Scrolling and find-and-replace are much too slow. But great printouts. —Deborah Kovacs	128K Apple. Two drives, mouse recommended. 5.25 inch and 3.5 inch.	★	★	★	★	★
Works of Art: Assortment, Education, & Holiday Series Samplers Springboard Software, Inc. 7808 CreekrIDGE Circle Minneapolis, MN 55435 (612) 944-3915 \$50 each v1.0	Three series of useful clip art with a twist: Comes in standard <i>MacPaint</i> format and also in a <i>HyperCard</i> stack that classes images by both keywords and picture. This makes it easy to search for just the right picture. Add your own images to the stack, too. Some of the pictures are too corny, though. —David Hallerman	1MB Macintosh. Two drives recommended. <i>MacPaint</i> or compatible; and/or <i>HyperCard</i> .	★	★	★	★	★

Ratings Key: O Overall Performance; D Documentation; EH Error-Handling; EU Ease of Use; S Support; ○ Poor; ★ Average; ★★ Good; ★★★ Very Good; ★★★★ Excellent

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(PC Week, December 1987)



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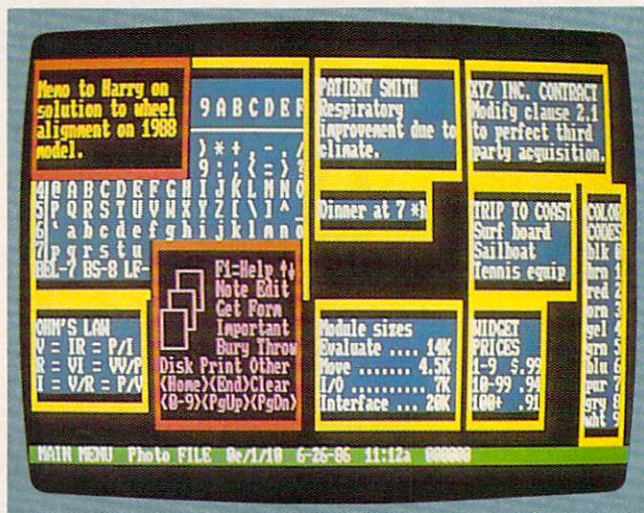
A Collection of Top-Rated Software To Help You Meet Your Home-Office Needs.

All the programs listed in our library of applications software garnered four-star ratings in the overall performance category—meaning that they've all been judged as excellent programs—when reviewed by this magazine. The software included has been reviewed since January 1987 and runs on either an IBM PC, PS/2, or other MS-DOS compatible; a Macintosh; or an Apple II computer. We will update this section monthly to serve as a reference for both novice and experienced computer users.

When the requirements list more than one computer, the machine marked with an asterisk (*) is the type on which the software was originally reviewed. The listed version number is the most current version, but not necessarily the one reviewed. Requirements are *not* listed where obvious (for instance, printers for word processors or modems for communications programs). Operating system requirements, such as MS-DOS or the Macintosh System file, are listed only when they're not the standard, minimum requirement (DOS 2.0 for IBM PC or compatibles, System 3.2 for the Macintosh, or ProDOS for the Apple II).

(Note that for back issues, this magazine was FAMILY COMPUTING from January 1987 to September 1987; from October 1987 to August 1988, it was FAMILY & HOME-OFFICE COMPUTING.)

816/Paint v247.31 (\$75). A hot and comprehensive paint program that takes wonderful advantage of the Apple IIGS's advanced graphics capabilities. Includes separate modes for the IIe and IIc as well. Reviewed December 1987. *Baudville*, (616) 698-0888. *Requires: 128K Apple IIe/IIc, 512K Apple IIGS*, 3.5-inch drive (IIGS); color monitor recommended.*



Tornado—a speedy, memory-resident personal database—helps you easily manage random notes, to-do lists, appointments, and messages.

Ability Plus v1.0 (\$259). Integrated software with a flair. The word processor, spreadsheet, database, business graphics, and communications modules easily share data with one another, as well as with other popular programs. Reviewed December 1987. *Migent, Inc.*, (800) 633-3444; (702) 832-3700. *Requires: 384K IBM PC, PS/2; two drives (hard-disk drive recommended); CGA, EGA, VGA, Hercules recommended.*

Back-It v3.1 (\$130). Transforms the tedious chore of backing up data into an almost pleasurable task. With menu-driven control, *Back-It* automatically numbers floppies (both 5.25- and 3.5-inch), verifies the data, backs up only those files modified since last backup or the whole disk, and more. Reviewed April 1988. *Gazelle Systems*, (801) 377-1288; (800) 233-0383. *Requires: 384K IBM PC, PS/2; hard-disk drive.*

Baker's Dozen v1.0 (\$60). This goes the traditional baker one better, with 14 handy utilities. Especially helpful are the mini-spreadsheet (useful for day-to-day calculations), the file locator (especially welcomed by hard-drive users), and a disk editor (for DOS experts). Reviewed January 1988. *ButtonWare, Inc.*, (206) 454-0479; (800) 528-8866. *Requires: 256K IBM PC, PS/2; two drives.*

Bank Street Writer Plus v1.0 (\$80). Incorporates many features found in professional word processors (a thesaurus, macros, and a spelling checker for instance) with easily accessed help screens and a

thorough tutorial. Can work for a family of writers. Reviewed January 1987. *Broderbund Software*, (415) 479-1185. *Requires: 128K Apple; 128K IBM PC*, PS/2.*

Better Working Eight-In-One v1.07 (\$60). With more modules than most integrated packages, *Eight-In-One* is an excellent choice for beginners or those with moderate needs. Includes a word processor, spelling checker, database, spreadsheet, outliner, graphics, communications, and utilities. Reviewed April 1988. *Spinnaker Software*, (617) 494-1200; (800) 826-0706. *Requires: 384K IBM PC, PS/2; CGA or EGA (for graphics).*

Better Working Wordprocessor v1.0 (\$30). More power than you might expect in such an inexpensive word processor. Includes such advanced features as an outliner, a spelling checker, and extensive printer support. It's menu-driven, too, for ease of use; yet once you learn the basics, there are also shortcut keys to speed up operations. Reviewed June 1988. *Spinnaker Software*, (617) 494-1200; (800) 826-0706. *Requires: 256K IBM PC, PS/2; CGA, EGA, or Hercules optional.*

CalendarMaker v3.0 (\$50). Create a calendar for any month or year. Details abound, including three calendar styles, pictures for each month or day, and up to 255 characters per day. Good for business or personal use. Reviewed October 1987. *CE Software, Inc.*, (515) 224-1995. *Requires: 512K Macintosh; printer.*

Dac Easy Light v1.0 (\$70). Ac-

counting program designed specifically for small-business owners who have little or no accounting expertise. Easy to set up and even easier to use. Includes general ledger, accounts payable (called "credit card"). Reviewed August 1988. *Dac Software*, (214) 248-0205. *Requires: 256K IBM PC, PS/2; two drives.*

ETG Plus (originally *A-Plus*) v1.3 (\$30). Productivity for families, especially students (high school and up), in a word-processing and graphics package that integrates text and drawings (such as charts and maps). Remarkably good software. Reviewed March 1987. *Savtek Corp.*, (617) 891-0638. *Requires: 384K IBM PC, PS/2; two drives; CGA; mouse optional.*

Fast Forms v1.2 (\$149). Personal tool kit for creating forms—any kind from an invoice to a telephone message form. First, you design forms with the drawing module. Then, as you need to fill them in, you call the forms to screen with the desk accessory. Data can be used with other programs such as *Microsoft Works*. Reviewed June 1988. *Shana Corp.*, (403) 463-3330. *Requires: 512K Macintosh; two drives recommended (required if 400K drives).*

First Draft v1.0 (\$70). Sophisticated outlining tool to help anyone organize ideas for reports, articles, memos, and presentations. You do the thinking; it does the numbering and the arranging. Reviewed October 1987. *Scholastic Software*, (212) 505-3000. *Requires: 64K Apple*, 128K IBM PC, PS/2; two drives; printer optional.*

Font/DA Juggler Plus v1.10 (\$60). Similar to *Suitcase*, this utility gives you access to almost unlimited fonts and desk accessories (DAs). But this package bests the competition with several more utilities for working with DAs, fonts, FKeys (function keys), and sounds, too. Best for the experienced. Reviewed August 1988. *ALSoft Inc.*, (713) 353-4090. *Requires: 512K Macintosh; 800K drive.*

The Graphics Studio v1.0 (\$50). Several paint programs have come out that maximize the IIGS's colorful capabilities. All are good, yet this one introduces another level of excellence that will set the standard. For instance, the zoom mode lets you adjust the magnification. Reviewed April 1988. *Accolade, Inc.*, (408) 296-8400. *Requires: 768K Apple IIGS*; 640K IBM PC, PS/2; color monitor recommended.*

Guide Mac v2.0 (\$200); **IBM v2.0** (\$275). Lets you write "Guidelines," which are on-screen-only documents that allow you to move between related pieces of information (either text, graphics, or video) at the click of a mouse—and, in that sense, is better at hypertext than *HyperCard*. A unique computer tool. Reviewed August 1987. *Owl International, Inc.*, (206) 747-3203. Requires: 640K IBM PC, PS/2; 512K Macintosh*; two drives recommended.

HyperCard v1.2 (\$49, or free w/ Macintosh). Employs the metaphor of cards in stacks to help you create collections of data linked by your own associations. Or browse and use others' collections. The built-in HyperTalk programming language gives *HyperCard* the potential for almost unlimited customization. Reviewed December 1987. *Apple Computer Inc.*, (408) 996-1010. Requires: 1MB Macintosh; two drives (hard-disk drive recommended).

HyperDA v1.1 (\$69). A desk accessory that solves the *HyperCard* dilemma: How do you look at data gathered in *HyperCard* stacks when you're running another program? *HyperDA* lets you browse and search through any stack and copy

but not change text or graphics. Reviewed July 1988. *Symmetry Corp.*, (800) 624-2485; (602) 844-2199. Requires: 512K Macintosh.

Javelin Plus v2.0 (\$395). Although it contains a full-blown spreadsheet, *Javelin* is not confined to this. The spreadsheet is just one of 10 "views" that model business and financial problems. You can also create flowcharts, tables, graphs, and charts. A financial powerhouse. *Javelin v1.1* reviewed May 1988. *Javelin Software Corp.*, (800) 528-3546; (617) 494-1400. Requires: 512K IBM PC, PS/2; two drives; CGA, EGA, VGA, or Hercules.

Lucid 3-D v2.0 (\$149). A spreadsheet that works two ways—either stand-alone or memory-resident. Packs a solid range of features too, including 51 built-in functions, macro capabilities, up to nine windows on-screen at once, and a handy built-in notepad. Reviewed June 1988. *Personal Computer Support Group*, (800) 544-4699; (214) 351-0564. Requires: 256K IBM PC, PS/2; two drives recommended; mouse optional.

MaxThink v3.4 (\$89). A fine outlining program with more features than most—such as an alarm and a report generator. That makes it take more time to learn, but it's well

worth the effort. Best for intermediate and advanced users. Reviewed November 1987. *MaxThink*, (415) 428-0104. Requires: 320K IBM PC, PS/2; two drives.

Microsoft Excel v2.0 (\$495). The PC version of *Excel* may have all you ever wanted from a spreadsheet—if you have enough hardware to support it. The smoothly done graphical interface is a delight to operate, and it's functional too, helping you get work done more efficiently. Reviewed March 1988. *Microsoft Corp.*, (206) 882-8080. Requires: 640K IBM PC, PS/2; 80286 or 80386 microprocessor; hard-disk drive; DOS 3.0 or higher.

Microsoft Works IBM v1.0 (\$149). Just like they did with *Works* on the Mac, Microsoft has come up with a masterpiece of integration. Combines word processor, spreadsheet, database, graphics, and communications so that it's exceptionally easy to share data. Also, screens and commands are similar in each module. Reviewed April 1988. *Microsoft Corp.*, (206) 882-8080. Requires: 384K IBM PC, PS/2; two drives; CGA, EGA, VGA, or Hercules; DOS 2.1 or higher.

Microsoft Works Mac v2.0 (\$295). What *AppleWorks* is for the

Apple II—the best integrated package for both beginners and experienced users—*Microsoft Works* is for the Mac (see MS-DOS version above). The manuals are thorough, well organized, but dry. Reviewed July 1987. *Microsoft Corp.*, (206) 882-8080. Requires: 512K Macintosh; two drives recommended.

MORE II v2.0 (\$395). An expanded, high-powered version of *ThinkTank*. If you like to work from lists and outlines, or if you often make presentations using flow- or tree-charts, then *MORE II* has all you could ask for. Reviewed April 1987. *Living Videotext, Inc.*, (415) 964-6300. Requires: 1MB Macintosh; hard-disk drive.

MouseTalk v1.5 (\$120). Communications software that combines the mouse-based convenience of pull-down menus and point-and-click commands with excellent text handling and advanced features. Reviewed July 1987. *United Software Industries*, (818) 887-5800. Requires: 128K enhanced Apple IIe/IIc/IIgs; two drives optional; mouse recommended.

Nutshell v2.0 (\$150). In the army of database programs, *Nutshell* falls somewhere between the heavy artillery and the foot soldiers. It's especially suitable for small busi-

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651-2186). To order, call

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nesses and a wide range of personal uses. Reviewed August 1987. *Clarisc Corp.*, (415) 962-8946. *Requires: 256K IBM PC, PS/2 (320K with DOS 3.0 or higher); two drives; 8087 coprocessor optional.*

Paintworks Plus v1.2 (\$70). Designed just for the IIGS, this paint program takes advantage of that computer's rich palette with 4,096 available colors. Particularly easy to use, and it does animation, too. Reviewed September 1987. *Media-genic/Activision*, (415) 329-0500. *Requires: 512K Apple IIGS.*

PC Talk4 v1.39 (\$99). The erstwhile shareware communications program is better than ever in its new commercial format. It's practically foolproof, thanks in part to all the user input it received during its formative years. Reviewed September 1987. *Headlands Corp.*, (415) 435-0770. *Requires: 192K IBM PC, PS/2.*

Personal Newsletter v1.4 (\$60). Quite a lot of desktop-publishing sophistication for the money. Your newsletters can be up to 10 columns wide and can include several kinds of graphics and banner headlines. Basically easy to use, since the manual acts as a good guide. Reviewed June 1988. *Softsync, Inc.*, (212) 685-2080. *Requires: 128K Apple II; two drives recommended; mouse optional.*

PFS: First Choice v2.0 (\$150). By integrating a word processor, file manager, spreadsheet, and communications program into one package, the PFS people have a winner for novices, average users, and small businesses. Reviewed April 1987. *Software Publishing Corp.*, (415) 962-0191. *Requires: 512K IBM PC, PS/2; two drives recommended; mouse optional.*

Publish It! Apple v1.03 (\$100); IBM v1.1 (\$200). Much like software on the Macintosh, this desktop-publishing package offers pull-down menus, scroll bars, dialog boxes, and icons. While these devices make it easier to use, the program still requires time and patience to learn completely. Reviewed June 1988. *Timeworks, Inc.*, (312) 948-9200. *Requires: 128K Apple* (enhanced); 512K IBM PC, PS/2; two drives; mouse or joystick (optional IBM).*

Q&A Write v1.01 (\$199). This stand-alone word processor is a spin-off from Q&A—the same publisher's integrated database and word processor. The company has enhanced many of the features, including a sophisticated search function and support for PostScript. Reviewed April 1988. *Symantec Corp.*, (408) 253-9600. *Requires: 384K IBM PC, PS/2 (512K recom-*

mended); two drives.

Quattro v1.0 (\$249). Will do everything Lotus 1-2-3 can do, along with several extra capabilities, yet it costs about half the price. Allows you to import 1-2-3 worksheets and to create new worksheets compatible with 1-2-3. Reviewed March 1988. *Borland International*, (408) 438-8400. *Requires: 384K IBM PC, PS/2; two drives.*

QuickKeys v1.1 (\$100). With this well-designed macro program that's always accessible, you can set up hundreds of keyboard shortcuts for inserting text, choosing menu items, clicking and moving the mouse, running all your programs, and much more. Easy and indispensable. Reviewed February 1988. *CE Software*, (515) 224-1995. *Requires: 512K Macintosh; two drives (hard-disk drive recommended); System 4.1 or higher.*

RapidFile v1.2 (\$295). A small-business database manager with a built-in word processor, spelling checker, and thesaurus. Useful for inventory, accounts receivable and payable, form letters, mailing labels, check writing, and much more. Reviewed September 1987. *Ashton-Tate Corp.*, (213) 329-8000. *Requires: 256K IBM PC, PS/2; two drives (hard-disk drive optional).*

Ready! v1.0 (\$100). Keep facts at your fingertips or structure your thoughts by using this memory-resident outliner with your word processor, spreadsheet, or other application. Has a nimble search function; dials the phone. Reviewed October 1987. *Living Videotext*, (415) 964-6300. *Requires: 256K IBM PC, PS/2 (512K recommended).*

Reflex Plus v1.0 (\$279). Much of the effort in putting together a powerful, relational database is eliminated here by the Mac's visual interface. When you want to relate a field in one file to a field in another file, all you have to do is draw a line between the two. A winning package. Reviewed July 1988. *Borland International*, (800) 543-7543, (408) 438-8400. *Requires: 512K Macintosh; two drives (hard-disk drive recommended).*

Silicon Press v1.0 (\$80). Print mailing labels, business cards, invitations, tags, and lots more. Graphics can be copied from any appropriate Mac program. Text can be merged from a database, too. Particularly valuable for small businesses. Reviewed May 1987. *Silicon Beach Software*, (619) 695-6956. *Requires: 512K Macintosh.*

Silk v1.1 (\$298). Many features that automate spreadsheet design make Silk a big time-saver even for experts. On-line help and thought-

ful menu system make it a boon for beginners. Shares data with Lotus 1-2-3. Highly recommended. Reviewed January 1988. *Daybreak Technologies, Inc.*, (213) 542-5888. *Requires: 512K IBM PC, PS/2; two drives (hard-disk drive optional); CGA or EGA; 8087/80287 math coprocessor optional.*

Spellswell v2.0f (\$75). If you're old enough to write, you can benefit from this simple-to-use, yet full-featured spelling checker. With a 93,000-word dictionary to start, you can add new words quickly and easily. Reviewed January 1987. *Working Software, Inc.*, (408) 423-5696. *Requires: 512K Macintosh.*

Suitcase v2.0 (\$60). Lets you leave Apple's limit of 15 desk accessories (DAs) and 200 fonts per System file in the dust (500 fonts with System 6.0 or higher). Once installed (just drag into System Folder), it enables you to choose any DA or font on your disk. A great way to use the Mac more efficiently. Reviewed June 1988. *Fifth Generation Systems, Inc.*, (504) 291-7221. *Requires: 512K Macintosh; two drives (hard-disk drive recommended).*

SuperPaint v1.1 (\$150). An advanced successor to the classic *MacPaint* program. It adds the object-oriented features of *MacDraw* for better control and resolution (especially with laser printer). Reviewed September 1987. *Silicon Beach Software*, (619) 695-6956. *Requires: 512K Macintosh.*

Thunder! v1.1 (\$50). For checking spelling rapidly, *Thunder!* can be installed as a desk accessory to verify words as you write or used as a stand-alone program. With an expandable 50,000-word dictionary, plus two more. Also analyzes text's reading level. Reviewed February 1987. *Electronic Arts*, (415) 571-7171. *Requires: 512K Macintosh.*

Tornado v1.8 (\$100; \$150 w/library templates). Random notes, to-do lists, calendars, memos, and messages are easily managed with this memory-resident utility. Also lets you set up database-like forms, and then search through and print out groups of related notes with lightning speed. Reviewed April 1988. *Micro Logic Corp.*, (201) 342-6518. *Requires: 256K IBM PC, PS/2; CGA, EGA optional.*

VP-Planner Plus v2.0 (\$249). An enhanced spreadsheet that works like the popular Lotus 1-2-3, yet includes such extra features as a built-in text editor for word processing and report generation, larger worksheets, and a unique multi-dimensional database facility. Reviewed July 1988. *Paperback Software International*, (415) 644-2116. *Requires: 384K IBM PC, PS/2;*

two drives (hard-disk drive recommended); CGA, EGA, VGA, or Hercules for graphs.

Webster's New World Thesaurus II v1.0 (\$60). Looking for a better word? With this program, you can find new words as you write. At a keystroke, a screenful of synonyms appears. Highlight the word you want to insert, press another key, and the work is done. Reviewed January 1987. *Simon & Schuster Software*, (800) 624-0023, (800) 624-0024 (NJ only). *Requires: 256K IBM PC, PS/2; two drives; color monitor recommended.*

Webster's New World Outliner+ v1.0 (\$70). Especially as a memory-resident program (it can also be a stand-alone), *Outliner+* can be a big plus for such tasks as planning projects or preparing talks and documents. Also includes a phone directory, address book, and several other helpful extras. Reviewed July 1988. *Simon & Schuster Software*, (800) 624-0023, (800) 624-0024 (NJ only). *Requires: 256K IBM PC, PS/2; two drives (hard-disk drive recommended); does not work with programs that use EGA or Hercules graphics.*

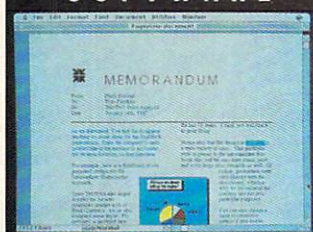
Webster's New World Writer II v1.0 (\$170). A menu-driven, multifunctioned word processor that's integrated with the *Webster's New World* thesaurus and spelling checker and includes their outliner as well. Superb help screens aid novices. Reviewed January 1987. *Simon & Schuster Software*, (800) 624-0023, (800) 624-0024 (NJ only). *Requires: 384K IBM PC, PS/2 (512K recommended); two drives (hard-disk drive recommended).*

WetPaint, Vol. 1 & 2 v2.0 (\$80). An attractive collection of clip art that's great for brochures, fliers, and newsletters, but not as good—since they're bit-mapped graphics—for laser printouts. Hundreds of drawings include symbols, borders, animals, arrows, foods, maps, and common office objects such as push pins and telephones. A good deal. Reviewed June 1988. *Dubl-Click Software, Inc.*, (818) 349-2758. *Requires: 128K Macintosh (512K recommended for supplied desk accessory).*

Word Finder IBM v4.0; Mac v2.0 (\$60). Even if it would help, many people don't bother to use a thesaurus when writing because looking up words takes too much trouble. The trouble is over with *Word Finder*, though, an on-screen, desk-accessory thesaurus that you can call up at any time. Reviewed July 1988. *Microlytics, Inc.*, (716) 377-0130. *Requires: 256K IBM PC, PS/2; 512K Macintosh*; two drives (hard-disk drive optional).* ■

Best-Selling Software

SOFTWARE



SPOTLIGHT

Microsoft Word v3.02. Strong challengers may be coming soon, but *Word* is still the most complete Macintosh word processor. Offering such sophisticated functions as style sheets for complete control of a page's format, the ability to create a table of contents and an index directly from either the document or the built-in outliner, and multicolumn print-outs. *Word* is a tool for creating complex documents as well as just for plain writing. Because *Word* was an MS-DOS program first, you can use the keyboard instead of the mouse for virtually every operation, including selecting text. In addition, the MS-DOS version can read Mac files, and vice versa. —DAVID HALLERMAN
Microsoft Corp., (206) 882-8080. Requires: 512K Macintosh; two drives (hard-disk drive recommended); \$395.



These best-seller lists, prepared exclusively for HOME-OFFICE COMPUTING by Egghead Discount Software, are based on actual sales at 110 Egghead stores around the United States for the month of July.

IBM

BUSINESS

1. Lotus 1-2-3 V2.01
Lotus Development Corp.
2. Word V4.0
Microsoft Corp.
3. Norton Utilities Advance Kit
Peter Norton Computing
4. Sideways V3.2
Funk Software
5. dBase III Plus V1.1
Ashton-Tate
6. WordPerfect V5.0
WordPerfect
7. PFS: First Publisher V2.0
Software Publishing Corp.
8. Turbo C V1.5
Borland International
9. Turbo Pascal: V4.0
Borland International
10. Form Tool V2.01
Bloc Development

ENTERTAINMENT

1. Flight Simulator V3.0
Microsoft Corp.
2. Test Drive
Accolade
3. Police Quest
Sierra On-Line
4. Leisure Suit Larry
Sierra On-Line
5. Hardball
Accolade
6. T.V. Game Shows
ShareData
7. California Games
Epyx
8. Falcon
Spectrum HoloByte
9. Earl Weaver Baseball
Electronic Arts
10. Chuck Yeager's Advanced Flight Trainer
Electronic Arts

EDUCATION

1. Learning DOS V1.01
Microsoft Corp.
2. Where in the USA Is Carmen San Diego?
Broderbund Software
3. Math Blaster Plus
Davidson & Associates
4. Where in the World Is Carmen San Diego?
Broderbund Software
5. Reader Rabbit
The Learning Company
6. Typing Tutor IV
Simon & Schuster
7. Think Quick
The Learning Company
8. Mixed-Up Mother Goose
Sierra On-Line
9. Barron's Study Program for the SAT
Barron's Educational Series
10. Algeblaster
Davidson & Associates

MACINTOSH

BUSINESS

1. Word V3.01-V3.02
Microsoft Corp.
2. Excel V1.5
Microsoft Corp.
3. Tops V2.0
Tops.
4. PowerPoint V2.0
Microsoft Corp.
5. MacDraw II
Clariscorp.
6. S.U.M.
Symantec Corp.
7. PageMaker V3.0
Aldus Corp.
8. File Maker II
Clariscorp.
9. Works V1.1
Microsoft Corp.
10. MacWrite V5.0
Clariscorp.

ENTERTAINMENT

1. Chuck Yeager's Advanced Flight Trainer
Electronic Arts
2. Beyond Dark Castle
Silicon Beach Software
3. PT-109
Spectrum HoloByte
4. Crystal Quest V2.2
Greene
5. Shadowgate
Mindscape
6. Falcon
Spectrum HoloByte
7. Flight Simulator V1.02
Microsoft Corp.
8. MacGolf
Practical Computer Applications
9. Uninvited
Mindscape
10. Tetris
Spectrum HoloByte

EDUCATION

1. Hyper Tutor
Telegraphics
2. Mavis Beacon Teaches Typing!
The Software Toolworks
3. Where in the World Is Carmen San Diego?
Broderbund Software
4. Typing Tutor IV
Simon & Schuster
5. Reader Rabbit
The Learning Company
6. Kids Time
Great Wave Software
7. Math Blaster
Davidson & Associates
8. Perfect Score w/Perfect College
Mindscape
9. Turbo Pascal: Tutor
Borland International
10. Evelyn Wood Dynamic Reader
Timeworks

APPLE

BUSINESS

1. AppleWorks V2.0
Clariscorp.
2. Publish It!
Timeworks
3. List & Mail
Avery
4. Timeout: QuicksPELL
Beagle Brothers
5. GEOS
Berkeley Software
6. Timeout: Super Fonts
Beagle Brothers
7. Dac Easy Accounting
Dac Software
8. WordPerfect V1.1
WordPerfect
9. WordPerfect V2.0
WordPerfect
10. Sideways V2.0
Funk Software

ENTERTAINMENT

1. Wings of Fury
Broderbund Software
2. California Games
Epyx
3. Test Drive
Accolade
4. Hardball
Accolade
5. Ultima V
Broderbund Software
6. Alien Mind
PBI Software
7. Defender of the Crown
Cinemaware
8. Strike Fleet
Electronic Arts
9. Chuck Yeager's Advanced Flight Trainer
Electronic Arts
10. Bard's Tale III
Electronic Arts

EDUCATION

1. Where in the World Is Carmen San Diego?
Broderbund Software
2. Where in the USA Is Carmen San Diego?
Broderbund Software
3. Math Blaster Plus
Davidson & Associates
4. Think Quick
The Learning Company
5. Mavis Beacon Teaches Typing!
The Software Toolworks
6. Where in Europe Is Carmen San Diego?
Broderbund Software
7. Reader Rabbit
The Learning Company
8. Algeblaster
Davidson & Associates
9. The Oregon Trail
MECA
10. Sesame Street Letters
Polarware Software

FAMILY COMPUTING

Living and Learning with Computers

How Three People Gained Freedom of Expression

BY KAREN KANE

How many computer phobics do you know? Chances are, you can name quite a few people who resist taking the computer plunge. The challenge for those of us who wish to share the benefits of computers is to find ways to inspire others to experience the joys of computing.

What follows are just a few stories about people whose lives have changed in some way because of computers. Perhaps they will inspire you to spread your enthusiasm to others. Then in "Celebrate Computer Learning Month," find out about the many contests and events scheduled in October for Computer Learning Month—a national project designed to promote computer learning.

LIGHTS, CAMERA, CTRL-ACTION

Seventeen-year-old John Duganne's dream is to be a movie director. When he's not in classes at the local high school or assisting at the computer center in his hometown of Santa Monica, California, he likes to work on script ideas, add episodes to his Super Guinea cartoon, and solicit tips on breaking into the fast-paced world of film—practices he hopes will help turn his dream of directing animated films into a reality. In John's dream, however, the image of Steven Spielberg in a director's chair with a loudspeaker is replaced by John in his wheelchair with a computer.

John has cerebral palsy. He is severely physically disabled, and because of speech impairments, specialists also thought he was mentally retarded. At age 7, John's parents gave him an Apple II, and for the first time in his life he could express his thoughts so that others could understand him. John first used the Apple II by pressing computer keys with a pencil held in his mouth. Later, he was equipped with a special head device which improved his control of the keyboard commands. He could even operate a joystick to play games.

Because his Apple was the first computer on the block, neighborhood kids would come



over and play games with John. He was able to make friends, and although he couldn't actually go out on the field and swing at a baseball, he could get an idea of what it was like by playing computer baseball with his friends.

A nearby neighbor saw the benefits of the computer for John and thought that her daughter, Dusty, who has Down's syndrome, might benefit, too. Soon, other families with computers and children with handicaps started meeting to share software and hardware. From that small group grew the Computer Access Center, a non-profit organization in Santa Monica where children with handicaps and their families can go to learn about and share the benefits of computers.

John spends time at the center demonstrating adaptive devices and specially designed programs to newcomers with cerebral palsy.

Dusty does the same for other kids with Down's syndrome or other learning problems. Parents run the show for the most part, and the group is linked electronically with 22 other centers across the country.

Since his first introduction to an Apple II, John and his family have been able to share the benefits of computers with hundreds of other people. With any luck, thousands more will enjoy John's animation creations.

WRITE ON KEY

While computers made it possible for John Duganne to communicate, they enabled Jonathan Furst to refine his communicative talents. When Jonathan Furst was in elementary and junior high school, he used to struggle with every writing assignment. Completing a one-page essay was like pounding a nail with his fist while hitting his head with a hammer.

KAREN KANE is associate editor at HOME-OFFICE COMPUTING.

ILLUSTRATION BY CLAUDIA TANTILLO

He hated the physical act of putting a pencil to the page, and his handwriting made reading his work just as painful. When his mother became interested in computers, she suggested that Jonathan try them out as well. Jonathan not only learned to type, he learned that he had a real gift with creative and expository writing. The computer gave him the freedom to go beyond the writing process and explore the creative side of assembling words to communicate an idea or a feeling.

At 18, Jonathan is starting his first year at the University of Arizona with a slew of writing-achievement awards and scholarships, which will pay for his tuition, room and board, expenses for a year of study abroad, and various special events and summer activities. Jonathan expects to further develop his talent for writing—as long as there's a computer around.



John Duganne's brother, David, gives computers the thumbs up.

PROUD OF COMPUTING

Alice's story exemplifies the confidence and pride computers can instill. Alice is an 8-year-old girl with a learning disability. She has great difficulty in school and, as a result, has very little self-confidence. When her teacher encouraged Alice and her classmates to individually stand up, give their names, and describe something special about themselves, Alice always responded, "My name is Alice, and I don't do anything."

Then she started paying regular visits to the computer lab. Alice became so involved with computers that she began creating simple programs that printed her name or some other message. In just a couple of months, Alice's sense of achievement improved so much that she proudly stood up in class one day and said, "My name is Alice, and I'm a computer person!"

Celebrate Computer Learning Month

*Exciting Contests and Creative Ideas to Help You and Your Family
Get More Involved with Computers*

BY KAREN KANE

Computer Learning Month is a national project set up to promote the benefits of technology. Each October, Computer Learning Month encourages people to learn together and to share their knowledge with others. "By learning together, we build better relationships with computers and with people," says Sally Bowman, director of Computer Learning Month.

This year, the theme is "Take part in Computer Learning Month. You'll love the relationships that develop." Along with activities designed for students and educators, there are contests, sweepstakes, free publications, and special offers geared toward individuals, families, community groups, and businesses. Everyone can get involved, and anyone who does is sure to learn something new with his or her computer.

PUBLISHED MATERIALS

The following materials are available from such retail stores as Waldensoftware and Tandy/Radio Shack or from Computer

Learning Month, P.O. Box 60007, Palo Alto, CA 94306-0007.

The Official Publication of Computer Learning Month—October 1988 includes details of the many activities planned for Computer Learning Month this year as well as highlights from last year's events.

Everything You Need to Know (But Were Afraid to Ask Your Kids) About Computer Learning will help you understand how computers are used in schools and how you and your family can use them at home. Definitions of common computer terms, explanations of the different types of software, and suggestions on selecting software make this 24-page guide an excellent resource for beginners.

Family Activities Guide contains dozens of activities for learning, sharing, and having fun with computers at home. Ideas range from publishing newsletters to designing race cars. Children and parents can use the computer together to learn more about comput-

ers, learn new ways of using them, explore new areas of learning, and just have fun.

Preparing For a Career in the 21st Century is a booklet geared toward the computer neophyte and is intended to give newcomers to the job market some background information that will help them prepare for a chosen career.

CONTESTS SPONSORED BY COMPUTER LEARNING MONTH

Each October, Computer Learning Month offers several contests to encourage people to explore new ways of using technology. This year the categories have been broadened to include more people—the old, the young, the experienced, and the novice; and families, groups, clubs, or schools. Prizes include thousands of dollars worth of gifts—complete computer systems, software collections, certificates, and magazine subscriptions. Below are some of the contests that are especially appropriate for families. For more details and official contest rules and entry

forms, pick up *The Official Publication of Computer Learning Month—October 1988* or write to Computer Learning Month, (see address above). Contests end November 15, 1988, unless otherwise noted.

- The writing contest this year emphasizes sharing and learning with computers. Entries to the **Newsletter/Storybook: Using the Computer as a Theme Contest** can be fiction or nonfiction, should promote sharing and communication with computers, and will be judged on originality, content, writing skills, design, illustration, layout, and overall attention to detail.

- Submit your original masterpieces in the **Art & Computers** contest. A photo essay, sketch, painting, collage, computer printout, or any other two-dimensional art medium can be used to communicate a message about computing. Entries will be judged on creativity, clarity, and significance of message, design, layout, and overall attention to detail.

- One of the best ways to share information and work is via telecommunications. The International Council for Computers in Education (ICCE) and Computer Learning Month have joined forces to sponsor the **Telecommunications Dream Project Contest**. Use your imagination to come up with a plan for expanding communication channels with people in other states and countries using the technology available today.

- If five or more people in your family or community group know another group of five or more people who don't use computers, you can share your expertise with them and win a computer system or software for both groups in the **Group to Group: Share Your Computing Knowledge Contest**.

- **Share the Magic of Computing Sweepstakes** and win a computer system or software. To qualify for the random drawing, you must share your knowledge of educational, entertainment, and productivity software with three people who are not currently using a computer at home. Open to adults and children. Contest deadline is December 31, 1988.

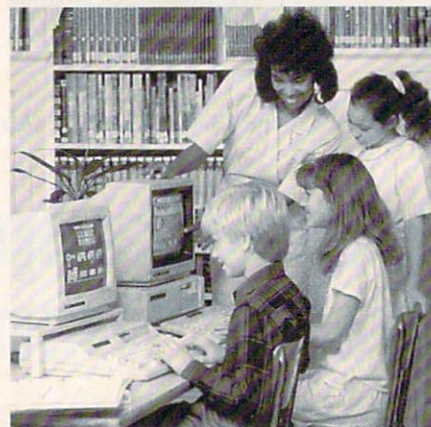
COMPANY-SPONSORED ACTIVITIES AND CONTESTS

There are more than 116 corporate sponsors of Computer Learning Month, and many are offering special software discounts, contests, and sweepstakes to help raise interest in computer learning. Here are some of the best deals and most exciting events for individuals or families. More information on these activities is listed in the *The Official Publication of Computer Learning Month* or from the sponsors themselves.

- To enter Compu-Teach's **short-story contest**, your children should write and illustrate their own short stories using Compu-Teach's *Once Upon a Time* . . . and submit them by November 30, 1988, to the company. Ten

winning entries for each computer format (Apple, IBM/MS-DOS, Macintosh) will be published in a book. A panel of authors and illustrators of children's books will judge the contest, and winners will receive 10 leather-bound copies of the book containing their stories. Compu-Teach, 78 Olive St., New Haven, CT 06511; (800) 448-3228, (203) 777-7738 in CT.

- Tandy/Radio Shack and The Learning Company are co-sponsoring The Learning Company **Look into the Future Story-Writing Contest**, which will give children a chance to imagine and write stories about life in the future and the role computers will play. Radio Shack Business Product Centers will become Children's Publishing Centers to help parents publish their children's creations.



Children using The Learning Company's Writer Rabbit to create their own stories.

Two winners will get an all-expenses-paid vacation to EPCOT with their parents. Details are available from Radio Shack stores or from The Learning Company, 6493 Kaiser Drive, Fremont, CA 94555; (800) 852-2255, (415) 792-2101 in CA.

- To help promote computers as creative learning tools, Logo Computer Systems Inc. is sponsoring a **sweepstakes** for students in grades K-12. Participants must create a project using *LogoWriter* that incorporates both text and graphics and send the company a printout postmarked no later than November 30, 1988. Selected through a random drawing, the first-prize winner will receive a computer system and the new home edition of *LogoWriter*. Ten second prize winners will also receive the *LogoWriter* home edition. LCSi, 121 Mount Vernon St., Boston, MA 02108; (800) 321-LOGO.

- Mindscape's **Shoot to Win! Photography Contest** challenges you to capture on film the experiences of kids learning with technology. The sharpest shooters will win Mindscape software valued at up to \$500. Send your black-and-white or color photographs to Educational Division Photo Contest, Mindscape, Inc., 3444 Dundee Road, Northbrook, IL 60062 no later than October 31,

1988; (312) 480-7667, (800) 221-9884.

- Scholastic's **Home-Publishing Contest** invites you to show off your work using such programs as *Bank Street Writer III*, *Multi-Scribe*, *SuperPrint*, and *Slide Shop* for family or home-publishing activities. The winner will receive \$500 worth of Scholastic software. In addition, everyone who enters will receive a copy of the *Scholastic Guide to Classroom Publishing*. Entries must be postmarked no later than November 15, 1988. Scholastic is also offering issues of its award-winning disk-based magazine, *Microzine* for \$4.99 (regularly \$29.95) through November 15, 1988. Scholastic Inc., 730 Broadway, New York, NY 10003; (212) 505-3000.

- Win hundreds of dollars worth of software in the **Look How I've Become More Productive Contest** sponsored by Springboard Software, Inc. Just enter your greatest *Springboard Publisher*, *The Newsroom*, or *Certificate Maker* creation by November 30, 1988. Springboard Software, 7808 CreekrIDGE Circle, Minneapolis, MN 55435; (612) 944-3915.

- Weekly Reader Software/Optimum Resource wants to hear about the creative ways you use Weekly Reader Software with your children. Send your typed, double-spaced entry of no more than 250 words to Weekly Reader/Optimum Resource's **How I Use Weekly Reader Software Contest**. First prize is 12 titles from Weekly Reader Software. Two second-prize winners will receive six programs. Entries must be postmarked no later than October 31, 1988. Weekly Reader/Optimum Resource, 10 Station Place, Norfolk, CT 06058; (203) 542-5553, (800) 327-1473.

- MicroPro International Corp. will offer its powerful, but easy-to-use word-processing package, *Easy Extra*, for only \$69 plus shipping through November 30, 1988. You'll also receive *Grammatik II* grammar checker and *WordFinder* electronic thesaurus free. (\$277 value.) For more details, call or write MicroPro International Corp., 180 Lake Front Drive, Hunt Valley, MD 21030; (301) 771-1151.

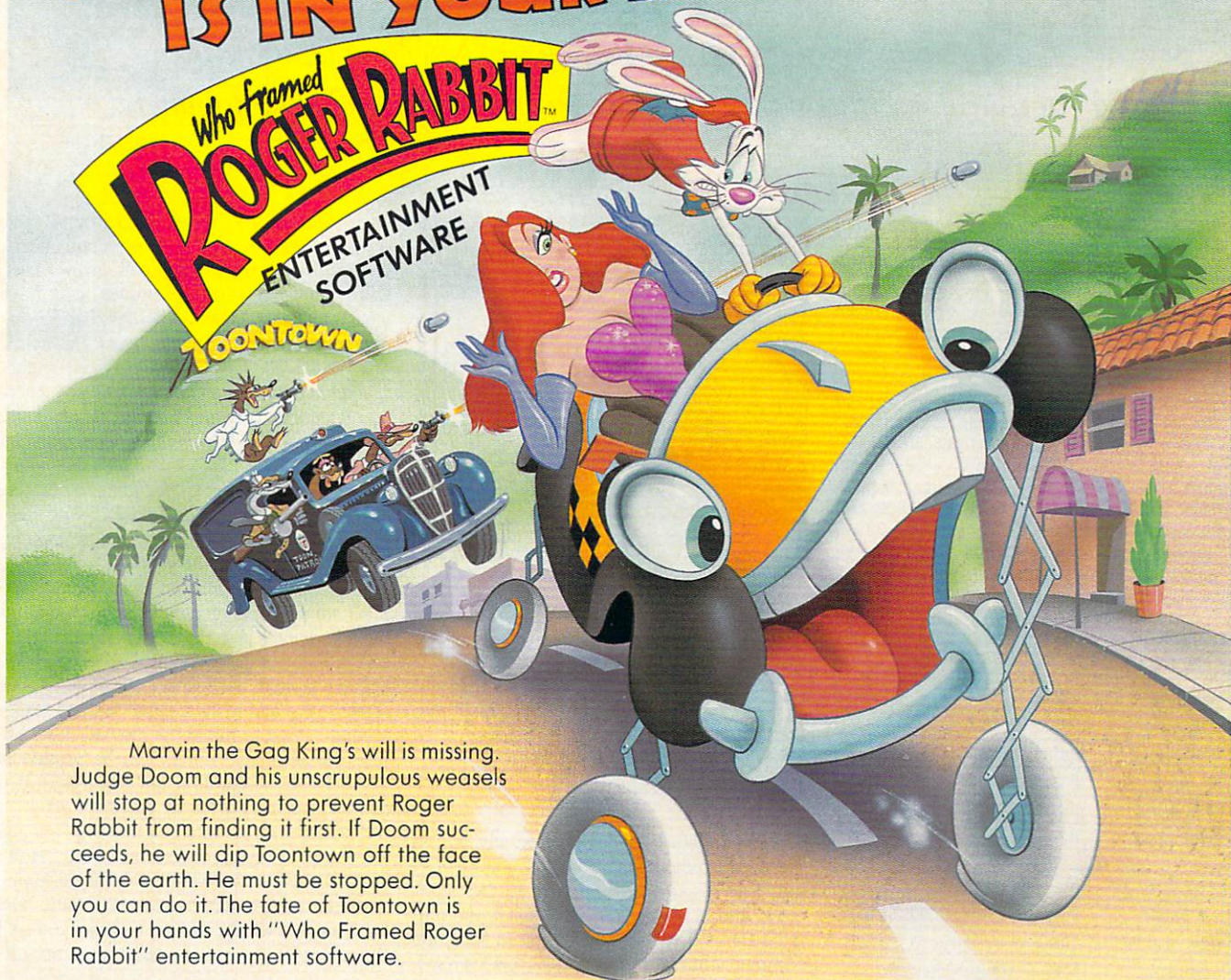
Enter your best recipe in Pinpoint Publishing's **Computers and Cooking Contest** and win a first prize of \$200, second prize of \$100, or one of ten copies of *Micro Cookbook* for third prize. Send entries to Pinpoint Publications 5865 Doyle St. #112, Emeryville, CA 94698; (415) 654-3050.

OTHER ACTIVITIES

In addition to the many activities sponsored by software companies, magazines, and retail stores, many other organizations in your area may be holding special events to celebrate Computer Learning Month. Keep your eyes peeled for all the creative events sponsored by schools, users' groups, computer clubs, libraries, and museums. And by all means, get involved.

THE FATE OF TOONTOWN IS IN YOUR HANDS!

Who Framed **ROGER RABBIT** ENTERTAINMENT SOFTWARE TOONTOWN



Marvin the Gag King's will is missing. Judge Doom and his unscrupulous weasels will stop at nothing to prevent Roger Rabbit from finding it first. If Doom succeeds, he will dip Toontown off the face of the earth. He must be stopped. Only you can do it. The fate of Toontown is in your hands with "Who Framed Roger Rabbit" entertainment software.

It's a fast-paced, action-packed adventure that's **more** than an arcade game. Stunning graphics, high quality animation and sound effects put you "in Toon" with Toontown's fate.

Can you defeat Judge Doom? Are you going to let him get away with this? It's up to you. And remember, Toons are idiotic—but they're not stupid!

Ask for "Who Framed Roger Rabbit" at a software dealer near you. The future of Toontown depends on it!

Available Now:
IBM PC/XT, AT,
PS/2 and 100%
Compatibles,
Amiga, Commo-
dore 64/128



Actual Amiga Screen



Actual IBM Screen



Actual Commodore Screen

Coming Soon:
Apple® II Series

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BV BUENA VISTA
SOFTWARE

Software for Learning and Leisure

Comprehensive and Capsule Reviews of New and Noteworthy Programs for Education, Personal Productivity, and Entertainment

The following table and ratings key relate to full and capsule software reviews below. Listed are various types of computers as designated under "System Requirements" and the models included under each designation. Any additional hardware, software, or memory listed is required unless noted as "recommended" or "optional." When more than one computer is listed under "System Requirements," the machine marked with an asterisk (*) is the one on which the software was reviewed. Requirements are *not* listed where obvious (for instance, printers with graphics programs). Operating system requirements, such as MS-DOS or the Macintosh System file, are listed only when they're not the standard, minimum requirement (DOS 2.0 for IBM PC or compatibles, System 3.2 for the Macintosh, or ProDOS for the Apple II).

Ratings Key: O Poor; ★ Average; ★★ Good; ★★★ Very Good; ★★★★ Excellent.

Designation	Models
512K Amiga	500, 1000, 2000
48K Apple	II/II Plus/IIe/IIc/IIGs (in IIe/c mode)
64K Apple	II Plus/IIe/IIc/IIGs (in IIe/c mode)
128K Apple	IIe/IIc/IIGs (in IIe/c mode)
128Ke Apple	IIe (enhanced ROM)/IIc/IIGs (in IIe/c mode)
Apple IIGs	IIGs only
48K Atari	800/600XL/800XL/65XE/130XE
512K Atari ST	520ST/1040ST/Mega ST
C 64	C 64, C 128 (in C 64 mode)
IBM PC	PC/XT/AT, PS/2 and compatibles
128K Macintosh	128K/512K/512Ke/Plus/SE/II
512K Macintosh	512K/512Ke/Plus/SE/II
512Ke Macintosh	512Ke/Plus/SE/II
1MB Macintosh	Plus/SE/II

EDUCATION

Monsters & Make-Believe and Transportation Transformation

SYSTEM REQUIREMENTS: 64K Apple, 128K IBM PC, PS/2*. Printer and color monitor optional.

PUBLISHER: Learning Lab Software Publishing Inc., 8833 Reseda Blvd., Northridge, CA 91324; (800) 247-4641, (800) 222-7026 in CA.



Monsters & Make-Believe

PRICE: \$40 each

PUBLISHER'S SUGGESTED AGES: 5 +

COPY PROTECTED: Yes

OVERALL PERFORMANCE: ★★★

DOCUMENTATION: ★★

ERROR HANDLING: ★★★

GRAPHICS QUALITY: ★★★

EASE OF USE: Easy

Celia, our fourth-grader, is the only one in the family who didn't like the computer—until she discovered *Monsters & Make-Believe* and *Transportation Transformation*. Now the rest of the family has to schedule computer time around Celia's creativity sessions. She's busy modeling monsters and conjuring cars, then writing and publishing their life histories.

Both *Monsters & Make-Believe* and *Transportation Transformation* combine creative-writing practice with the same put-it-together playfulness that made Mr. Potato Head and Colorforms hits. They're almost as easy to use, too. Some reading skills are needed, but my 6-year-old son, Todd, and his best friend, Victoria, quickly learned to find their way around the simple menus with minimal help.

Each creation begins with a backdrop. *Monster* settings range from an immaculate lab (perfect for Dr. Frankenstein) to a comfortable (for vampires) Gothic castle. Vehicles are equally at home on the desert or in outer space—not surprising, since one of the hottest bodies available is an oversize carrot!

Once you've selected a background, you press the spacebar to flip through body parts. For monsters, there are heads, arms, legs, faces, and so forth. Vehicles can have wheels, motors, wings, engines, hood ornaments, propellers, drivers, eyes, bumpers, and various odd items. You can move shapes around the screen to decide exactly where you want them. Unfortunately, shapes can't be rotated or sized: You can't put a propeller on the bottom or change an arm's position.

Once you've finished designing a creature or a car, you can save and print it. Both programs remind players to save before exiting. Now it's time for some creative journalism. A simple word processor lets inventors explain what's really going on. Editing options include delete, insert, automatic word wrap, and full-screen cursor control. Todd was disappointed that stories are limited to one screen—we had to save page one and start a second screen to finish his monster's adventure. Pictures and stories can be printed in various sizes so children can create portraits, comics, picture books, or just goof off.

These games are terrific rainy day—or any day—fun. They're educational, too. However, while our software testers were happy to dictate stories and loved to hear them read later, none used the word processor unless I suggested it.

—TAN A. SUMMERS

Language Carnival I

SYSTEM REQUIREMENTS: 64K Apple. Color monitor optional.

PUBLISHER: DLM, One DLM Park, Allen, TX 75002; (800) 527-4747

PRICE: \$20

PUBLISHER'S SUGGESTED AGES: 8 +

COPY PROTECTED: Yes

OVERALL PERFORMANCE: ★★★★★

DOCUMENTATION: ★★

ERROR HANDLING: ★★★★★

GRAPHICS QUALITY: N/A

EASE OF USE: Easy

I sat down with my 8-year-old daughter, Jamie, to explore *Language Carnival I* an hour

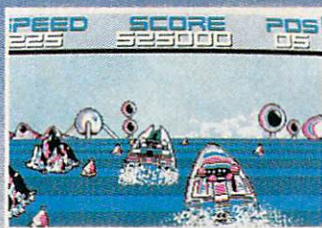
OFF SHORE

WARRIOR

VIOLENCE ON THE HIGH SEAS, THE ULTIMATE TEST OF MANHOOD



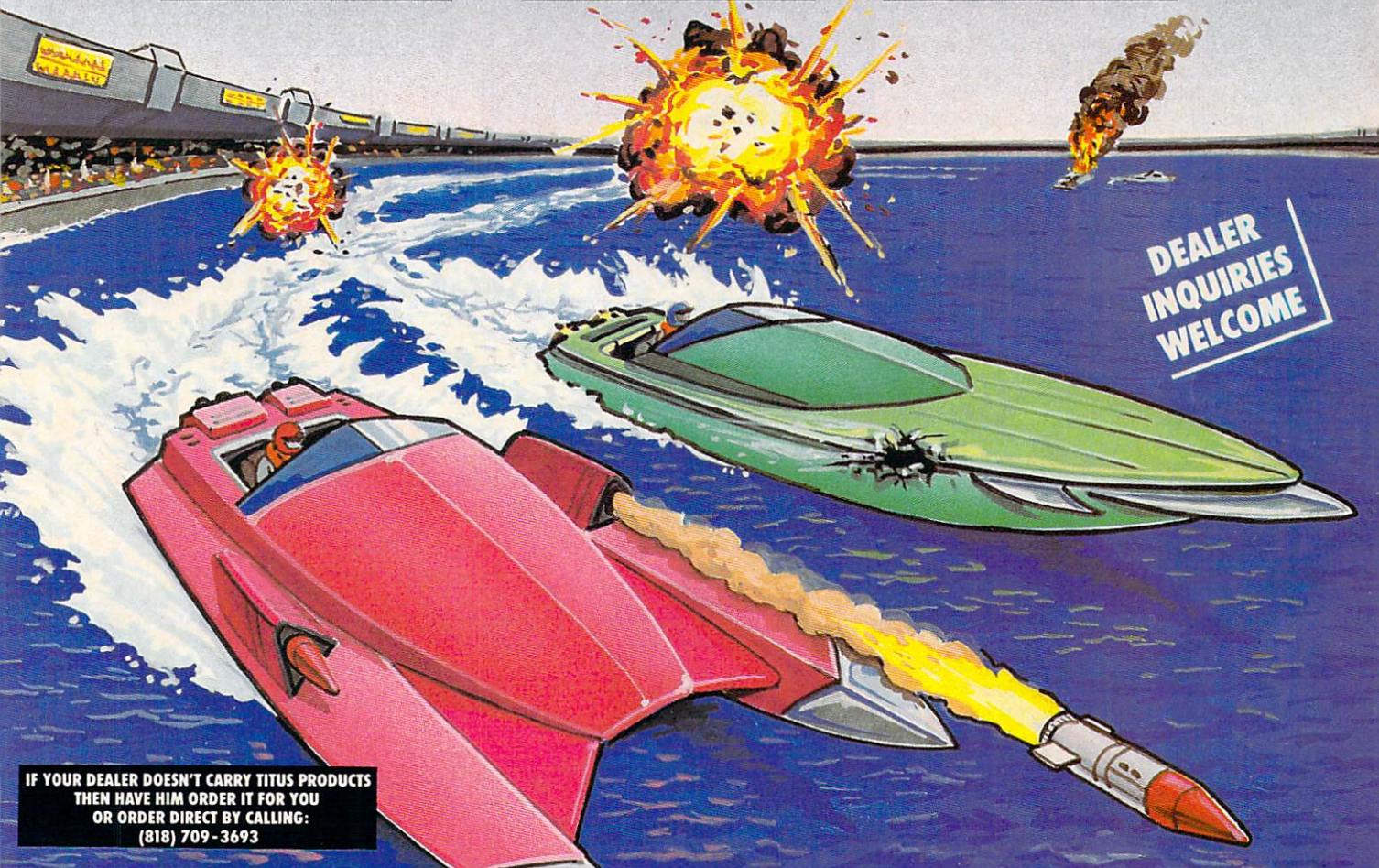
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IBM AND COMPATIBLES VERSION



ATARI ST VERSION



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THEN HAVE HIM ORDER IT FOR YOU
OR ORDER DIRECT BY CALLING:
(818) 709-3693

THE YEAR IS 2050.
VIOLENCE AND TERROR HAVE TAKEN OVER THE WORLD, CIVILIZATION HAS DISAPPEARED,
VIOLENT STREET SPORTS ARE NOT ENOUGH TO SATISFY THE BLOOD LUST OF A NATION.
A NEW SPORT HAS EVOLVED. YOU ARE AN OFF SHORE WARRIOR, ANYTHING GOES.
THE BATTLE CAN BRING YOU FAME OR DEATH... THE ONLY RULE IS TO WIN WHATEVER THE COST.
CAN YOU MEET THE CHALLENGE AND BECOME THE SUPREME OFF SHORE WARRIOR.
A WORLD AWAITS, PREPARE FOR THE ULTIMATE TEST...



TITUS™

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CIRCLE READER SERVICE 47

FAMILY COMPUTING

before dinner one night. It took only a few minutes for her to learn how to operate the menus, which are controlled with three keys (spacebar, return, and escape), and I couldn't pry her away from the computer to help me set the table.

Designed to motivate children to explore, understand, explain, and practice language and thinking skills, *Language Carnival I* presents riddles and puzzles and offers a selection of multiple-choice answers. The clever riddles deal with double meanings of words that lead children to ponder the subtleties in the English language.

For example, what do you call a cow that lies in the dirt all day? Ground beef. Jamie was thrilled with the answer, but was unfamiliar with some of the other choices. A second- or third-grade reading level is necessary to avoid frustration, but with reading assistance a younger child could enjoy the material.

Even for experienced readers, I recommend that an older sibling or parent stay within calling range. The riddle, "Why is a river so rich?" stumped Jamie at first. One of

the choices was "because it has a bank on either side." Looking over her shoulder, I asked, "What do you call the place where a river lies?" She thought, answered "bank," and then beamed. Some of the double meanings and subtle jokes may need explaining for unsure readers who pronounce the words incorrectly or for youngsters like Jamie, whose reading ability exceed their language understanding.

This is an enjoyable game for the whole family, and I highly recommend it. The only

limitation we found was that you can't print out the riddles. They're good enough to share!

—MARLENE BUMGARNER ELTGROTH

Jumping Math Flash

SYSTEM REQUIREMENTS: 48K Apple. Color monitor recommended.

PUBLISHER: Mindscape, 3444 Dundee Road, Northbrook, IL 60062; (800) 221-9884, (312) 480-7667 in IL.

PRICE: \$50

PUBLISHER'S SUGGESTED AGES: 6-10

COPY PROTECTED: Yes

OVERALL PERFORMANCE: ★★★

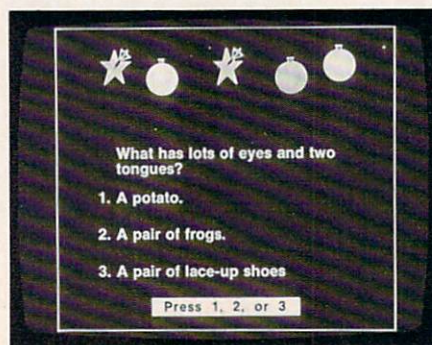
DOCUMENTATION: ★★★★★

ERROR HANDLING: ★★★★★

GRAPHICS QUALITY: ★★

EASE OF USE: Easy

I half expected a graphic of Mick Jagger to come up on the screen, and The Rolling



CAPSULE REVIEWS

EDUCATION/PERSONAL PRODUCTIVITY

TITLE/PUBLISHER PRICE	SUMMARY	SYSTEM REQUIREMENTS	RATINGS					
			CP	O	D	EH	GQ	EU
Big Blue Disk Volume #2 Softdisk 606 Common St. Shreveport, LA 71101 (318) 221-8718 \$10 each	Volume #2 of this monthly magazine-on-a-disk includes a simple flat-file database good for home inventory or address and phone listings, but it lacks search, sort, and reporting features. Also included is a version of <i>Mastermind</i> and <i>Yahtzee</i> , high quality clip art, and tips and tricks for DOS. Something for everyone. —JUDITH ZORNBERG	256K IBM PC.	N	★	★	★	★	A
Dinoscience DinoSoft 14584 Weath Drive San Jose, CA 95124 (408) 371-5466 \$40-\$45 v1.2	Provides a quick lesson about dinosaurs and tests reading comprehension with a short quiz and four games. Topics include the kinds of food dinosaurs ate and where they lived. Depth of lessons and detail in graphics could be better. Ages 8-14. —STEVE WILLIAMS	128K IBM PC. CGA.	Y	★	★	★	★	E
HyperAtlas MicroMaps Box 757 Lambertville, NJ 08530 (609) 397-1611; (800) 334-4291 \$99	If you're planning a trip or just want to learn about places in the world, visit <i>HyperAtlas</i> first. Move from a map of the world to maps of specific places, then zero in on data such as population and per capita income. Especially useful is the ability to create your own information cards for favorite restaurants or museums, for example. —GWEN SOLOMON	1MB Macintosh. <i>Hypercard</i> .	N	★	★	★	★	E
MacNutriplan Micromedex Corp. 187 Gardiners Ave. Levittown, NY 11756 (516) 735-8979 \$75 v2.1	A calorie counter which helps you achieve a balanced diet. Includes a 400-food database with room for 200 of your own. Tracks the level of 20 key nutrients for any combination of foods, compares that information to RDA levels, and provides the actual and percentage difference. A steep price for a task you can do by hand. —ROB GILPIN	48K Apple, 256K IBM PC, 512K Macintosh*.	N	★	★	★	N/A	E
Math Masters: Multiplication & Division DLM, One DLM Park Allen, TX 75002 (214) 248-6300 \$46 v2.0	Your 8- to 14-year-olds can become the "Master of Mathotics" in this drill-and-practice shooting-gallery program. Ability to customize everything from types of feedback to speed to question content makes <i>Masters</i> a good choice for math skills practice. —GWEN SOLOMON	64K Apple II.	Y	★	★	★	★	E

Ratings Key: O Overall performance; D Documentation; EH Error-Handling; EU Ease of Use; GQ Graphics Quality; ★ Poor; ★★ Average; ★★★ Good; ★★★★ Very Good; ★★★★★ Excellent; N/A Not Applicable; E Easy; A Average; D Difficult; CP Copy Protected, yes or no

FAMILY COMPUTING

Stones song "Jumping Jack Flash" to play in the background of Mindscape's new educational mathematics program that simulates arcade-style action, but even though that didn't happen, *Jumping Math Flash* is a gas, gas, gas.

The object of the game is to maneuver a small happy face through a maze of numbers, arriving at the correct answer to an addition, subtraction, multiplication, or division problem before being eaten by a sea creature. Kids will love being able to control the speed and sound levels and the way high scores are recorded and displayed. Parents will like the options to review their child's progress (including missed problems) and print out scores.

The accompanying documentation (really a teacher's manual) is well laid out and easy to understand. Parents will find six activity sheets, answer sheets, and ideas for three noncomputer-based games intended to help reinforce math facts.

Jumping Math Flash is a good software investment, offering sound educational value disguised in a fast-action game. I recommend

this program for children as young as 5 or 6 and would use it as reinforcement for children in the upper-elementary school grades. My 4½-year-old son can add 1 to numbers 0 through 9. By adjusting the game to its simplest format and lowest speed, he was soon able to answer problems successfully. If his enthusiasm for the game is any indication of how other kids will react, *Jumping Math Flash* won't be a dust gatherer!

—JUDITH ZORNBERG



Jumping Math Flash is a gas, gas, gas.

PosterMaker Plus

SYSTEM REQUIREMENTS: 512K Macintosh.

PUBLISHER: Broderbund, 17 Paul Drive, San Rafael, CA 94903; (800) 527-6263, (415) 492-3200 in CA.

PRICE: \$60

PUBLISHER'S SUGGESTED AGES: 13+

COPY PROTECTED: No

OVERALL PERFORMANCE: ★★★★★

DOCUMENTATION: ★★★★★

ERROR HANDLING: ★★★★★

GRAPHICS QUALITY: ★★★★★

EASE OF USE: Easy

People buy computers for a variety of business and personal reasons. But often, when asked what they are able to do with the newly acquired unit, what miracle it can perform, people suffer from a loss of words to adequately explain. I have labeled a category of programs "instant gratification software,"

CAPSULE REVIEWS

ENTERTAINMENT

TITLE/PUBLISHER PRICE	SUMMARY	SYSTEM REQUIREMENTS	RATINGS					
			CP	O	D	PS	GQ	EU
Breach Omnitrend Software, Inc. P.O. Box 733 West Simsbury, CT 06092 (203) 658-6917 \$40	A tactical war game set in the distant future with a built-in construction set. The simple mechanics allow novice war gamers to quickly learn the game, while the open-endedness will appeal to seasoned veterans. Incomplete documentation and quirks in the game (such as not having to return to base to complete the mission) detract from game play. —JIM PHELAN	512K Amiga, 512K Atari ST, 320K IBM PC, 512K Macintosh*.	N	★	★	★	★	E
Bubble Ghost Accolade, Inc. 505 S. Winchester Blvd. San Jose, CA 95128 (408) 985-1700 \$30-\$35	Help a little "puffergeist" free himself from his earthly confines by guiding him and his pet bubble through 35 perilous rooms. This cute arcade game is simple to master and ideal for those looking for quick, mindless fun. —DAMON OSGOOD	512K Amiga, 512K Apple IIgs, 512K Atari ST, C 64/128, 256K IBM PC*.	Y	★	★	★	★	E
Murder on the Atlantic IntraCorp 14160 S.W. 139th Court Miami, FL 33186 (305) 252-9040 \$35-\$40	No stunning graphics, but a challenging workout for those who enjoy complex whodunnits. The only characters who aren't acting suspiciously are you and the murder victims. Clues in the package add to the classic mystery atmosphere while the \$10,000 grand prize for the correct solution adds some incentive to crack this tough nut. —JEFF DONAHUE	512K Amiga, 128K Apple, 512K Apple IIgs, 512K Atari ST, C 64/128, 256K IBM PC w/CGA*.	N	★	★	★	★	A
Sherlock: The Riddle of the Crown Jewels Infocom 125 Cambridge Park Drive Cambridge, MA 02140 (617) 492-6000 \$35-\$43	Take on the identity of Doctor Watson, Sherlock Holmes's famed assistant in a search for the stolen Crown Jewels of England. An intriguing plot and Infocom's typically subtle sense of humor combine with an easy-to-use interface to make an enjoyable and challenging adventure. —DAMON OSGOOD	512K Amiga, 128K Apple, C 64/128, 192K IBM PC*, 512K Macintosh.	N	★	★	★	N/A	E
Street Sports Soccer Epyx, Inc. 600 Galveston Drive Redwood City, CA 94063 (415) 366-0606 \$40	Another game of the <i>Street Sports</i> series. <i>Soccer</i> is the easiest to play but not the most exciting. The "street" element of the others is lacking since the differences between players are marginal and the fields hold no real obstacles. —DAVID LANGENDOEN	512K Apple*, 512K Apple IIgs, C 64/128, 256K IBM PC.	N	★	★	★	★	E

Ratings Key: O Overall performance; D Documentation; PS Play System; EU Ease of Use; GQ Graphics Quality; ○ Poor; ★ Average; ★★ Good; ★★★ Very Good; ★★★★★ Excellent; N/A Not Applicable; E Easy; A Average; D Difficult; CP Copy Protected, yes or no

which produces ego-satisfying hardcopy you can boast about with very little time and effort. *Print Shop* is such a program, and so is *PosterMaker Plus* by Broderbund.

PosterMaker Plus allows its users to create custom signs and banners, using a variety of fonts and graphics, with the ability to adjust the size to meet specific needs. Design options allow you to create visual effects previously associated only with professional printing. When trying to create different effects, I was able to *s-t-r-e-t-c-h* text; curve either top, bottom, or both; have words appear to go "off into the sunset;" and wrap text around circular or rectangular shapes.

Aside from its ease of use and flexibility in manipulating text, *PosterMaker Plus* is designed to work with a range of other pro-



grams. Files are exchangeable with *SuperPaint*, *Adobe Illustrator*, *PictureBase*, *MacDraw*, *PageMaker*, *Ready, Set, Go!*, *Cricket Draw*, *MacPaint*, *FullPaint*, and *ThunderScan*. Not only can work be imported but exported as well. For example, using *Smooth Fonts* in *PosterMaker Plus* you can create a curved text banner and merge it into a *PageMaker* or *Ready, Set, Go!* document to enhance a newsletter headline.

You can save your work in a variety of formats: *Paint*, *Scaled Paint*, *PICT*, and *PosterMaker*. If you plan to use text in a laser-printed document, use *Smooth Fonts* text for maximum resolution. For the user who prefers not to use the mouse, keyboard commands work just as well.

The accompanying documentation is easy to follow and very thorough. Since sign templates are included on disk, the documentation devotes a section to their use and customization. Another section, *Hints and Tips*, provides a wealth of ideas for producing more professional-quality output. Also included are instructions for creating T-shirts, silk screens, etched glass patterns, overhead transparencies, and many other projects.

PosterMaker Plus is equally useful for both family and business, whether you want to create a dazzling party banner, an award-winning poster for a science project, or an effective advertisement for your business. It's a must for all.

—JUDITH ZORNBERG

Entertainment

Microsoft Flight Simulator Version 3.0

SYSTEM REQUIREMENTS: 256K IBM PC with CGA. Hard-disk drive recommended.

PUBLISHER: Microsoft Corp., 16011 NE 36th Way, Box 97017, Redmond, WA 98073; (206) 882-8080

PRICE: \$50

COPY PROTECTED: No

OVERALL PERFORMANCE: ★★★★★

DOCUMENTATION: ★★★★★

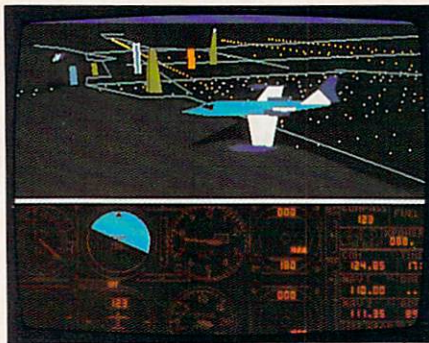
PLAY SYSTEM: ★★★★★

GRAPHICS QUALITY: ★★★

EASE OF USE: Difficult

The first major update of *Flight Simulator* in four years is here—and it's loaded with new features. Microsoft had both armchair and professional pilots in mind when they designed *Version 3.0*. The pull-down menus place the new options within easy reach and give novice pilots a quick start. The multiple window option allows you to choose between five different views, including three new third-person views: from a spot plane, a mobile ground base, and a control tower. You can now display simultaneously two different views in addition to the radar map! This takes a lot of the guesswork out of complicated aerial maneuvers.

In addition to the planes found in earlier versions of *Flight Simulator*, a Lear Jet (with more than double the flight speed of the old Cessna 182) and a crop duster have joined the Microsoft squadron. Although the Lear Jet is difficult to fly, it's great for anyone who likes long-distance journeys. The old World War I Flying Ace game is still there, but they have added a new crop-dusting game and formation flying. In addition, two or more players using separate machines can fly together via modem or cable. *Version 3.0* even has a built-in flight school that demon-



strates everything from taking off to performing loops and spins.

Flight Simulator 3.0 is not copy protected so you can save it on your hard disk drive. This greatly speeds up scenery changes and

response from the pull-down menus. *Version 3.0* can support both EGA and VGA graphics. I tried it out on a machine with 16-color EGA, and it looked fantastic. Unfortunately, if you want to try the advanced flying instruction, you need a hard- or high-density disk drive.

The documentation is large and imposing, but no more than would be expected with such a complex simulation. *Flight Simulator* veterans will probably need to take some time to get used to using the pull-down menus, but all the new features will make it well worth your while.

The graphics of *Version 3.0* look better; the game system allows for more flexibility; and the improved planes give flying aces fresh challenges while the new options help novice pilots ease into flying. *Flight Simulator 3.0* leaves all the other flight simulators flapping their wings. —STEVE WILLIAMS

Beyond Dark Castle

SYSTEM REQUIREMENTS: 512Ke Macintosh.

PUBLISHER: Silicon Beach Software, 9770 Carroll Center, Suite J, San Diego, CA 92126; (619) 695-6956

PRICE: \$50

COPY PROTECTED: No

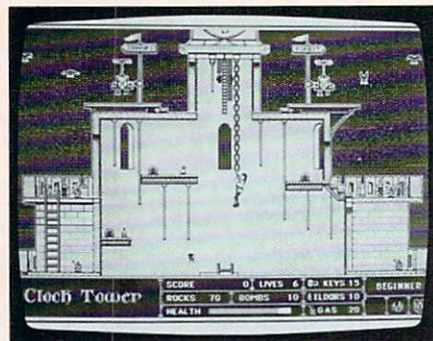
OVERALL PERFORMANCE: ★★★★★

DOCUMENTATION: ★★★

PLAY SYSTEM: ★★★★★

GRAPHICS QUALITY: ★★★★★

EASE OF USE: Easy



For those of us who loved *Dark Castle*, but were disappointed with the ending (or lack thereof), Silicon Beach Software has come out with the answer: *Beyond Dark Castle*.

The story picks up as you, Prince Duncan, are just escaping from the dungeon where the Black Knight's Gargoyle had thrown you. With the aid of Merlin the Magician, you have discovered the entrance to the Black Knight's inner sanctum. Your task is to obtain once again the powers of the Fireball and the Shield and find the Five Orbs, which will open the door that stands between you and the evil Black Knight.

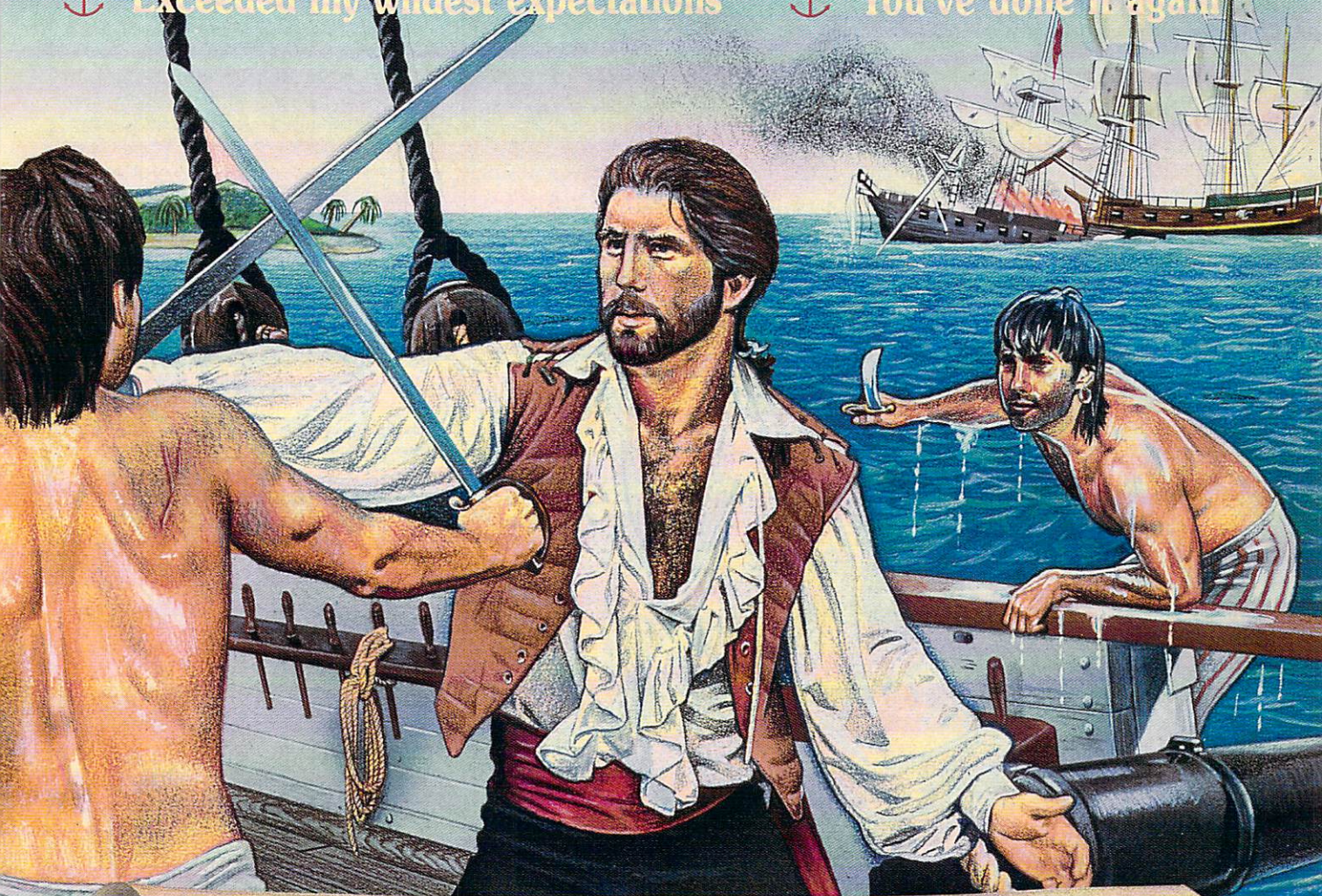
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⚓ "Exceeded my wildest expectations"

⚓ "Magnificent game"

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Very little has changed from the original *Dark Castle*. The ambidextrous controls remain a combination of keyboard (up, down, left, right, jump, duck, and action) and mouse (use of weapons). I have found this to be one of the best playing systems around, allowing for complexity without becoming utterly confusing.

Another thing that hasn't changed is the superb graphics. They're clean, smooth, and glitch-free. The sound, however, is probably the best feature of the game. Every noise, from footstep to thunderclap, is digitized and adds to your enjoyment of *Beyond Dark Castle*.

Among the features not in the original are a map of the castle layout, an option to practice in any room, and a much-needed save-game option. These improvements, in addition to a few new monsters, make *Beyond Dark Castle* more than just an extension of its predecessor. I highly recommend *Beyond Dark Castle* to anyone who likes great graphics, amusing sounds, or sophisticated arcade action.

—DAMON OSGOOD

Willow: The Computer Game

SYSTEM REQUIREMENTS: 512K IBM PC with CGA. Joystick or mouse optional.

PUBLISHER: Mindscape Inc., 3444 Dundee Rd., Northbrook, IL 60062; (312) 221-9884



PRICE: \$40

COPY PROTECTION: Yes

OVERALL PERFORMANCE: ○

DOCUMENTATION: ★★

PLAY SYSTEM: ○

GRAPHICS QUALITY: ○

EASE OF USE: Easy

If you're like me, you enjoyed the movie *Willow*. Even though the film was aimed at children, it was fun for adults who let their imaginations run wild. Hoping for something of an equivalent caliber, I looked forward to reviewing *Willow: The Computer Game*. I'm sorry to say I was disappointed.

In place of the fast-action, exciting visual

effects featured in the movie and the enthusiasm of George Lucas and Ron Howard felt in every frame, the computer version is filled with murky graphics, tedious game sequences, and sound that a Casio watch could easily duplicate.

The *Willow* universe consists of seven separate game sequences relating to the story of Willow Ufgood. His quest is to save the baby Princess Elora Dan and defeat the wicked Queen Bavmorda. To win the game, a player must successfully complete the first six game sequences in proper order and then defeat the queen in "The Final Battle." Most of the games are rigidly structured so that there is only one way to complete a sequence, which forces one to practice each game repeatedly.

The mechanics of the game are also not up to Mindscape's typically high standards. The response to critical keystrokes in several of the game sequences is sluggish and unpredictable. The load time for some game sequences can be as long as one minute! Since a sequence must be reactivated after every unsuccessful attempt to complete the sequence, you can imagine how tiring it becomes staring at a blank screen during repeated reloading.

I recommend seeing the film instead of purchasing the game; you'll spend a lot less money and be more entertained.

—ROB GILPIN

Entertainment News and Hints

The Latest Scoop on Games

BY JIM PHELAN

★ After just releasing *King's Quest IV—The Perils of Rosella* (256K IBM PC; \$50), Sierra On-Line has three more sequels, which should be available by the end of the year. *Space Quest III—The Pirates of Pestulon* is a 3-D animated adventure following space janitor Roger Wilco throughout the galaxy. A terrorist skyjacking and a dangerous scuba mission are just a few of the cases Sonny Bonds encounters in *Police Quest II—The Vengeance!* *Leisure Suit Larry II* is also in the works. All three games will initially be available for IBM PCs and later converted to Amiga, Apple IIGS, Atari ST, and Macintosh formats.

★ Speaking of sequels, *Interstel* is about to release *Star Fleet II: Krellan Commander* (384K IBM PC; \$60). Now you control a Krellan battlecruiser and four destroyer escorts on a search-and-destroy mission through 35 galactic regions with over 1,000 planets. This is a unique twist since in *Star Fleet I*, the Krellans were your enemy. *Scavengers* (also



Princess Rosella contemplating a midnight swim in King's Quest IV.

for the IBM PC) is another Interstel game with many worlds to explore. In this post-nuclear-holocaust adventure, you are one of a four-person team of survivors seeking food and weapons. With over four million different worlds to investigate, I can imagine how long it will take to complete your search.

★ *Visions of Aftermath: The Boomtown* (256K

IBM PC; \$40) is yet another post-nuclear simulation. Mindscape has you rebuilding civilization after surviving the disaster. A multiple-player option, five difficulty levels, four win conditions, seven terrains, and four scenarios make the game almost as open-ended as *Scavengers* (and sounding much more interesting). Two more science fiction titles by Mindscape have also been released. As *Captain Blood* (512K Amiga, 512K Atari, C 64/128, 256K IBM PC; \$35-\$50), your mission is to search the solar system for five clones (of you) who are draining your energy. In the second game, you're the regional space marshal investigating the disappearance of an entire space *Colony* (512K Macintosh; \$50). After many years of ignoring the science fiction market, Mindscape has finally acknowledged its importance.

★ Halloween is just around the corner, but Spectrum HoloByte's *Haunted House* for the IBM PC may not be on the market in time to

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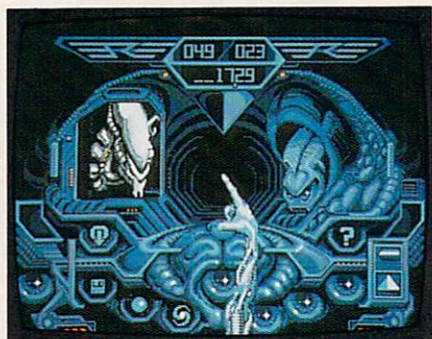


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The mysterious control panel of Captain Blood's spaceship.

scare you. Though this simulation—in which you rescue your new bride from a house filled with surprises—was originally scheduled for an October release, production problems may delay it until November. I believe this will have a major impact on the success of the program since most people want to visit a haunted house *before* Halloween. . . . Another topical program is **Wall Street Raider** (512K Amiga, C 64/128, 256K IBM PC; \$35-\$40). Up to four players divide a billion dollars and use various news sources to decide upon investments. As a "perk," **Intra-corp**, the game's publisher, has included in every box a coupon for a free video rental of the movie *Wall Street*.

★ Strategists and history buffs may be interested in two recently released tactical war simulations. **The Civil War** (128K IBM PC; \$35) from **Avalon Hill** recreates the classic battle between the North and South. Players can save and print the results of each battle—a feature more games should include. With over 60 individually rated commanders to choose from, this simulation will hold your interest for more than a few skirmishes. . . . **Strategic Simulations**'s latest construction set comes with Waterloo, Borodino, Quatre Bras, and Auerstadt scenarios. **Battles of Napoleon** (64K Apple, C 64/128, 256K IBM PC; \$50) allows you to alter such game parameters as terrain and the effects of weapons to see what might have happened if . . .

★ A unique text adventure that I'm eager to play is **Guardians of Infinity** for the IBM PC. As the inventor of a time machine, you and five agents travel back to November 15, 1963, to thwart the assassination of President Kennedy. **Paragon Software** has also announced a more traditional computer game—**Wizard Wars** (512K Amiga, C 64/128, 256K IBM PC; \$35-\$45). In this adventure, you attempt to destroy an evil wizard to "restore the cosmic balance." Although I haven't yet seen these two releases, (which should both be available by the time you read this), the descriptions I've seen made me realize that an original text adventure may still be preferable to a generic graphic adventure.

GAME HINTS

Police Quest (Sierra On-Line). A graphic adventure in which you explore the brutal world of vice, drugs, and homicide as well as the daily routines involved in police work. (512K Apple IIGS, 512K Atari, 256K IBM PC, 512K Macintosh)

★ Never forget to perform the required vehicle safety inspection.

★ If you're trying to get Woody to open up about the backroom, remember the old saying, "money talks."

★ The nightstick in the patrol car will prove useful against the biker gang.

★ Be kind to Sweet Cheeks Marie; she may be of some help to you later.

★ When entering the jail, remember to put your revolver in the locker.

★ If you're having trouble using the phone, try dialing the operator.

★ Don't get Helen Hots off the hook unless you're planning to get a date with the commissioner's wife.

★ Taselli's poster and the Hoffman file are good evidence for a No Bail Warrant.

★ Hoffman's car holds interest, but only if you're looking in the glove compartment or trunk.

★ Don't run red lights unless you're in code three.

—JOSEPH MINCH,
Amory, Mississippi

Panzer Strike! (Strategic Simulations). World War II simulation covering the entire Eastern Front, the Western Front, and the North African Campaign. Battle another player or the computer while rewriting history. (64K Apple, C 64/128)

★ Start the campaign with a generous number of mortar units. During setup deployment, place these units so they have a direct line of sight to the area(s) where you suspect the enemy is located, but behind your other units so that they will not take enemy fire.

★ Tank machine guns will fire only when the tank is stationary (except at point-blank range).

★ Consider the proper use of your Heavy Weapons sections when choosing support units for battle.

★ The German 88 AT is deadly. First priority for your mortars is to take out these anti-tank guns.

★ Don't charge the enemy like the calvary going to the rescue. Many of the enemy units will remain hidden until several turns into the game. Move forward a few formations at a time, taking advantage of any cover terrain available.

★ Watch the suppression point level of your units and rally a formation when it starts to falter.

★ If your weapons have a range advantage, don't be in a hurry to reach the objective. If the enemy has the range advantage, move as quickly as possible to where your weapons can be effective.

★ Dug-in enemy infantry is a problem, but your mortars can break them up in a few turns.

—LLOYD HENNEGEN,
Chino, California

CONVERSIONS

Ancient Art of War at Sea (Broderbund). Now available for 128K Apple, 128K Apple IIGS, 512K Macintosh. Already out for 256K IBM PC. Reviewed in December 1987 issue.

Déjà Vu (Mindscape). Now available for 512K Apple IIGS. Already out for 512K Amiga, 512K Atari, C 64/128, 512K IBM PC, 512K Macintosh. Reviewed in July 1986 issue.

Paperboy (Mindscape). Now available for 512K IBM PC. Already out for 128K Apple, 256K Apple IIGS, C 64/128. Reviewed in February 1988 issue.

Tetris (Spectrum HoloByte). Now available for 512K Amiga, 48K Apple, 512K Apple IIGS, 512K Atari, 512K Macintosh. Already out for C 64/128, 256K IBM PC. Reviewed in July 1988 issue.

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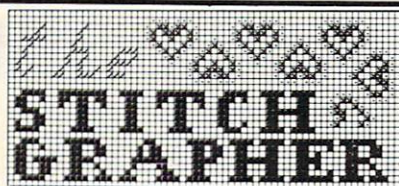
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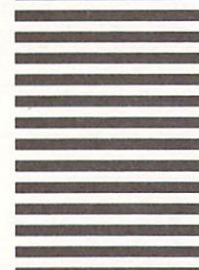
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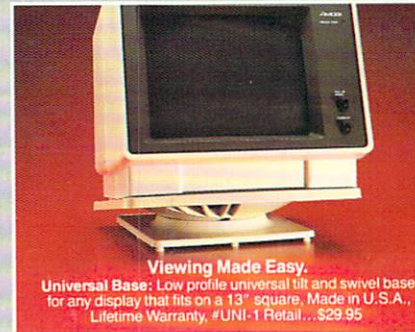
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